DOCUMENT RESUME

ED 064 616 AC 012 713

AUTHOR	Kreplin, Hannah
TITLE	Credit by Examination: A Review and Analysis of the Literature.
INSTITUTION	California Univ., Berkeley. Office of the Vice President - Planning and Analysis.
SPONS AGENCY	Ford Foundation, New York, N.Y.
REPORT NO	P-20
PUB DATE	Jul 71
NOTE	92p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Acceleration; College Administration; *College Credits; College Faculty; *College Programs; College Students; Cost Effectiveness; Credits; Educational Testing; *Equivalency Tests; Higher Education; *Literature Reviews; Measurement Techniques; Student Motivation; Test Construction; *Testing

ABSTRACT

This paper examines programs of course credit by examination in American higher education. After a brief sketch of the credit-hour system, various programs in actual operation are described. The ensuing analysis focuses on the following issues: appropriateness of various subject-matters to programs of credit by examination; attitudes towards credit by examination; results for participating students of credit by examination programs; financial costs and benefits of credit by examination; and patterns of examination design and administration. A four-page bibliography is included. (Author/CL)

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CREDIT BY EXAMINATION:

A REVIEW AND ANALYSIS OF THE LITERATURE

Hannah Kreplin

FORD FOUNDATION PROGRAM FOR
RESEARCH IN UNIVERSITY ADMINISTRATION

Office of the Vice President—Planning
University of California

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FORD GRANT NO. 680-0267A

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July, 1971

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PREFACE

This is one of a continuing series of reports of the Ford Foundation sponsored Research Program in University Administration at the University of California, Berkeley. The guiding purpose of this Program is to undertake quantitative research which will assist university administrators and other individuals seriously concerned with the management of university systems both to understand the basic functions of their complex systems and to utilize effectively the tools of modern management in the allocation of educational resources.

This paper examines programs of course credit by examination in American higher education. After a brief sketch of the credit-hour system, various programs in actual operation are described. The ensuing analysis focuses on the following issues: appropriateness of various subject-matters to programs of credit by examination; attitudes towards credit by examination; results for participating students of credit by examination programs; financial costs and benefits of credit by examination; patterns of examination design and administration.

History of the Credit-Hour System

An adequate understanding of the uses and types of examinations for credit and of attitudes towards such examinations requires some knowledge of the historical context in which academic courses and degrees in the United States came to be measured in terms of units and credit hours. While the first half of the nineteenth century in the U.S. saw a substantial increase in the number and types of institutions of higher learning and in the percentage of the population attending them, it also saw a trend towards the standardization of inflexible curricula and of restricted methods of instruction. The emergence of the credit-hour system apparently coincided with Charles W. Eliot's introduction of electives at Harvard College in 1869. Following Harvard's lead, the notion of electives rapidly spread both within disciplines and among institutions, and this expansion was paralleled by the introduction of quantitative course measurements. Dietrich Gerhard identifies two phases in the growth of the course credit system. In the first phase, 1870 to 1890, the colleges began to measure the teaching of subject matter in hour units. In the second, 1890 to 1910, the credit system was consolidated: the value of each course both in high school and in college was now listed in units of credit, and it was definitely stated how many units of credit were required for receiving the respective degrees.[1]

A variety of explanations have been offered for the ready acceptance of the unit or credit hour measure for courses and degrees. In order to adequately prepare their students for college-level work, high schools were pressuring for standardization both of their programs and of college entrance requirements. Partially in response to the high schools, in 1899

the Committee on College Entrance Requirements specified "national units, or norms" which "would make for an easy and frequent exchange (of individuals and credits) over the whole area of the U.S."[2] The new units were adopted by the newly organized College Entrance Examination Board of the Middle States and Maryland and by the North Central Association. Undoubtedly, however, the Carnegie Foundation for the Advancement of Teaching, with Eliot as chairman of the board of trustees, secured the complete acceptance of the credit-hour system. In 1906 the Foundation initiated its pension plan for college teachers. In order to be eligible for these retirement allowances, a college

> must have at least six professors giving their entire time to college and university work, a course of four full years in liberal arts and sciences, and should require for admission not less than the usual four years of academic or high school preparation or its equivalent, in addition to the preacademic or grammar school studies.[3]

Further, a college had to accept the unit plan for admission, a unit being defined as a course of five periods weekly. While Andrew Carnegie did not invent the unit measure, it became widely known as the "Carnegie Unit." And the Foundation stated explicitly that "in the counting the fundamental criterion was the amount of time spent on a subject, not the results attained."[4] Through a pension program similar to the Carnegie one, the General Education Board of the Rockefeller Corporation extended the Carnegie requirements to additional institutions. Thus by 1910 the credit system had come to embrace the whole American educational system above the level of the grade school.

Two other factors help explain the institutionalization of the credit-hour system and the emphasis on time rather than achievement--traditions unique to the American educational system. First, the extreme diversity

in American education made time spent a more easily applied measure than knowledge acquired. Second, at the turn of the century there was a growing awareness that education was a ware to be marketed. College education was coming to be valued not only for its prestige but also as a vocational prerequisite. Once again, hours in the classroom appeared to be a more efficient measure than subject-matter learned.

One might ask, why the standardization of a four-year college curriculum rather than two, three, or five years? Edward S. Jones and Gloria K. Ortner observe that in the American college up to 1850, it was customary to rate students largely on the basis of the number of years of attendance or subjects taken. From 1870 to 1910, students at Harvard frequently completed the B.A. in three years. Indeed, Eliot pushed for a three-year B.A., but was unable to make that standard stick. After 1910, restrictions were introduced at Harvard and the four-year B.A. became the rule. Jones and Ortner identify a variety of influences on the formalization of college education into a four-year curriculum:

1) There was little trust put in final examinations, and external examinations had no tradition in the U.S. Hence, the time spent on the college campus became a convenient measure.
2) The accrediting agencies which started functioning in 1914, in seeking a standard by which to measure the colleges, promoted a theory that all students should take a prescribed amount of work in a prescribed fashion.
3) State universities or education departments have been able to regularize college practices through their control of degrees and certificates.
4) American educators came to emphasize four years of social and intellectual campus living, quite apart from credits earned.
5) Preprofessional requirements tended to stipulate a four-year curriculum.
6) Some institutions needed four years of tuition and dormitory fees for regular budgeting.[5]

The credit-hour system was originally intended to ensure standardization while protecting the flexibility of the elective system. However,

the increasing emphasis on time spent rather than on educational achievement resulted in an institutionalized inflexibility which was criticized as early as 1912 by Henry S. Pritchett, president of the Carnegie Foundation for the Advancement of Teaching: "these units have now served their main purpose." He went on to suggest that modifications were necessary to ensure flexibility in requirements.[6] Thus almost as soon as the Foundation had secured the institutionalization of the credit-hour measure, basic problems with the system became apparent.

Flexibility in American Higher Education: An Overview

From 1910 to the mid-1920's, the credit-hour system for measuring course and degree requirements became more firmly institutionalized and increasingly inflexible. While countless critics of the system emerged, World War I apparently diverted American attention away from educational concerns. In the 1910's and 1920's, the Carnegie Foundation was joined by a number of other foundations in an extensive involvement in higher education. From the mid-1920's on, these foundations turned a critical eye on their early endeavors in education and directed their efforts away from issues of standardization and towards experimentation. Nearly all of the "progressive," "new college" experiments in the U.S. in the 1930's depended heavily on foundation support. In supporting programs at institutions such as Chicago, Minnesota, Swarthmore, Stephens, Antioch, Bennington, and Sarah Lawrence, the foundations were trying to inject an element of flexibility into higher education, with the expectation that the success of such experiments would lead other institutions away from rigid adherence to the credit-hour system and towards more flexible requirements, curricula, examinations, and such.[7] This expectation was

not fulfilled, due in part to the fact that by the 1930's organized academic disciplines rather than individual educational institutions commanded the loyalty and energy of faculty members.

During the 1930's efforts to inject greater flexibility into the credit-hour system were prompted primarily by an interest in enrichment rather than in acceleration. [Note: Acceleration is defined in this report as "progress through an educational program at rates faster or ages younger than conventional."[8]] In other words, most of the experimental college programs endeavored to provide either all or a selected group of students with a fuller educational experience, not necessarily a shorter or a cheaper one. If acceleration occurred, it was an indirect byproduct of the major thrust of the program, and in some cases acceleration was explicitly discouraged. Nonetheless, these early experiments did introduce the notion of credit by examination to the American educational scene and made considerable refinements in the use of comprehensive examinations.

It required an event of the magnitude of World War II to turn attention in American higher education to acceleration. The War demanded a more efficient and larger output of educated people, and the awarding of credit by examination was one obvious way to increase this output. However, only a few institutions initiated major programs of acceleration, and almost none continued these programs on any significant scale beyond the war years. During the late 1940's and through the 1950's into the 1960's, where credit by examination programs were found in colleges and universities, they were focused not on acceleration but again on enrichment, or on providing opportunities for the educationally disadvantaged. And such programs were generally directed to nontraditional students: the younger student, the older student, military or ex-military personnel,

the superior student, the transfer student, the preprofessional student, the foreign student. The major method of enrichment during this time period was the introduction of honors or independent study programs, and they rarely involved credit by examination procedures. Honors and independent study programs aimed at enrichment have undoubtedly competed with and detracted attention from programs of examination for credit and acceleration.

At least since 1912, criticism of the credit-hour system has abounded, but in nearly 70 years such criticism has had very little effect on higher education in the U.S. Those who criticize the measurement of educational accomplishment in terms of time spent in the classroom cite many reasons, the most important of which is that a time measure obscures what many feel ought to be the major measure of higher education--namely intellectual competence or achievement. Critics argue that requiring all students to take the same number of courses and spend the same number of hours in the classroom--the credit-hour system in a nutshell--simply makes no sense. Students ought to be able to proceed through an educational program at their own pace. The academic lock-step arrangement measures the mechanics and formalities of the educational process rather than the product. In addition, it is argued that the credit-hour system is costly to students in terms of time and money, costly to faculty members in terms of time, and costly to institutions in terms of money, resources, and facilities. The traditional credit-hour system gives inadequate recognition to the wide diversity in experience and academic background of students, and consequently ignores differences in intellectual ability, potential, and objectives. A number of observers of the American higher educational scene have suggested that the linking of credit with time spent in the classroom severely biases the quality of the relation between faculty

member and student. The faculty member is put in the position of policing students to ensure that the required amount of time is indeed spent, and the student is given insufficient responsibility for his own educational progress. Finally, it is argued that the credit-hour system stands in the way of educational experimentation at the overall individual institutional level.

A number of critics of the credit-hour system have expressed their objections in direct, if colorful, comments:

> In an address to the 1960 annual meeting of the Association of American Colleges, Louis T. Benezet, President of Colorado College, asked, 'What sanction, after all, established 120 semester hours? How do we know how many courses a student needs to become educated?' He called attention to John H. Finley's reference to the dean's office as 'A marketplace for the exchange of those negotiable elective tokens by which one through skillful barter might come to his degree and yet be a versatile ignoramus.'[9]

Ronald L. Flaugher, Margaret H. Mahoney, and Rita B. Messing paraphrase an apt description:

> The modern college is being assimilated to the pattern of modern industry. In dealing with students, colleges use the assembly line technique and ideal. The parts affixed as the student moves down the assembly line are courses with value in credits. When the student has all the courses bolted on, we add up the credits they are worth and give him a degree. Parts are standardized throughout the country and students can be shipped from coast to coast to be completed.[10]

Given the seriousness of the above criticisms of the credit-hour system, and the consistency with which such criticisms have been put forward over the past half-century, it is somewhat surprising that the credit-hour system has remained so firmly entrenched in the American higher educational scene. Lanora Lewis suggests that the major stumbling block to revision of the credit-hour system has been the need for measures which are interchangeable among the many institutions of higher education.[11]

While programs such as honors, independent study, and tutorial work attempt to resolve some of the above problems, such programs fail to tackle the following issues: the linking of credits, degrees, and intellectual achievement with hours spent; the expense in time and/or money to students, faculty, and institutions; differences other than superior or not superior in students' backgrounds, abilities, and objectives. Very likely honors and independent study programs have been readily received because they do not challenge the credit-hour system of measurement. In theory, comprehensive examination schemes could resolve some of the above problems, but in practice comprehensive exams have generally been used as final, overall measures of general ability or for honors recognition. Where comprehensive examination programs have been initiated which challenged the credit-hour system, they have frequently been modified or abandoned over time. Comprehensive examination schemes do have the potential of providing fuller curriculum integration, whereas credit by examination schemes limited to individual courses do not.

It would appear that the most obvious and efficient solutions to the above problems lie in programs of credit by examination which emphasize acceleration. But acceleration has generally been opposed by American educators for two reasons: 1) It challenges the credit-hour system; 2) the major experiments in acceleration over the past forty years have been handicapped by problems of method and circumstance. Sidney L. Pressey suggests some reasons why accelerated programs have failed to attract educators:

> The preceding review shows 'in toto' something of an anomaly--the balance of the evidence seemed distinctly in favor of acceleration, but prevailing opinion and practice have been against it. Why? Twice, movements toward acceleration have failed to establish educational procedure. Each time the main reasons for the failure would seem to have been a fault

> of method plus handicapping circumstance. In the twenties and early thirties, the fault of method was the comparative neglect of means for preventing social maladjustment; then the handicapping circumstance was the depression, which made it futile to move young persons rapidly through school only to put them into unemployment. Following the second world war, acceleration has been shunned because of the burdensomeness of the lengthened school year as a method, plus the circumstance of the great number of veterans in college, making it seem unwise to move young students more rapidly into a group with others much more mature.[12]

Moving away from this somewhat pessimistic overview of the history of and prospects for programs of credit by examination, the next section of the paper will discuss the types, uses, and consequences of credit by examination.

Types, Uses, and Consequences of Credit by Examination

The following are the major types of examinations which may result in college credit and the possible results:

Type 1) Anticipatory examinations for graduating high school seniors.

Results: placement only; credit only; placement and credit; neither placement nor credit.

Type 2) Examinations upon college or university admission to waive prerequisites to advanced courses for lower division students.

Results: placement only; credit only; placement and credit.

Type 3) Examinations for lower and/or upper division students as an alternative to the satisfaction of all attendance, papers, midterms, finals, and such requirements of a regular credit course.

Results: placement only; credit only; placement and credit.

Type 4) Examinations to demonstrate the college level ability of nontraditional students (military, adults, foreign students, transfer students).

Results: placement only; credit only; placement and credit; neither placement nor credit.

Type 5) Examinations covering more than one course; degree by examination.

Results: placement only; credit only; placement and credit; degree.

Type 6) Examinations, generally for graduate students, to satisfy noncredit competence requirements such as language or mathematics.

Results: neither placement nor credit.

Types one through five are also used to evaluate individual performance for purposes of counseling and to evaluate overall institutional performance. Neither of these uses results in the awarding of credit to students. The following discussion will delineate the uses and consequences of the above six types of credit by examination through descriptions of a variety of individual institutional and national programs in actual operation.

Type 1) Anticipatory Examinations

The most widely known program of anticipatory examinations for graduating high school seniors is the Advanced Placement program of the College Entrance Examination Board [hereafter referred to as AP and CEEB]. The AP program emerged in 1955 as the result of two Ford Foundation-sponsored experimental projects focusing on the integration of high school and college curricula and on educational acceleration through early admission to college. The AP program offers superior high school students the opportunity to receive advanced standing in college on the basis of college level work which they have completed in high school. The major emphases of the program are on curricular articulation between high school and college and on enrichment of the superior student rather than acceleration. The program is limited to traditional freshman courses and is

based upon proficiency acquired through the completion of classroom courses of study. The AP program therefore does not challenge the credit-hour system, except that students may receive what might be termed "double credit"--credit in both high school and college for the same course work--but the program does emphasize diverse levels of competence.

Under the AP program, "the high schools teach the courses; the colleges place the students and credit them with the work; and the CEEB coordinates the program."[13] AP examinations are offered in the following 11 subjects.

American History
Biology
Chemistry
English
European History
French
German
Latin (Vergil, Prose, Comedy, Lyric)
Mathematics (Calculus AB, BC)
Physics (B, C)
Spanish

The CEEB provides high school teachers with course descriptions and syllabi for each of the examination subjects. The descriptions, syllabi, and examinations are prepared by examining committees of five or more teachers (three from colleges, two from high schools), with the assistance of test specialists on the staff of the Educational Testing Service [hereafter ETS]. The examinations are administered by participating high schools each year during the third week of May. While in theory students who have not taken AP courses may take the examinations, this is not encouraged and hence is rare. Except for the Latin examination, which is 1-1/2 hours long, the examinations are three hours in length, and include predominately essay questions, with one section of objective questions. The modern language examinations include listening comprehension sections using tape recordings. The examinations are intended to designate the level at which the student should begin his college study. Committees of readers appointed by ETS, representing both high schools and colleges, grade the essay

questions and assign scores ranging from 5 (high honor) to 1 (failure). ETS scores the objective questions. ETS then sends the examination papers and interpretations, with the school's recommendations and descriptions of the AP courses, to those colleges designated by the student, as well as to the student himself and his high school. Candidates' fees for examinations given in the high schools are $5 for registration and $15 for each subject examination.

The AP program was initiated in 1955 with 104 high schools, 130 colleges, and 1,229 candidates participating. In the 1965-66 school year, 2,500 high schools, more than 1,000 colleges, and 39,000 candidates participated in the program. By 1969, nearly 320,000 students had been tested. Although the AP program is national in scope and has continued to grow rapidly, the number of participating high schools is relatively small in comparison to the total number in the United States, and there is a strong tendency for a large number of AP candidates to enroll in a small number of colleges and universities.[14]

Research indicates extreme variability both within and between individual institutions regarding policies on the AP program. Shirley A. Radcliffe and Winslow R. Hatch list ten general college or university policies:

1. Placement in an advanced course with credit for the prerequisite.
2. Placement in an advanced course with no credit for the prerequisite.
3. Credit for one semester of the freshman course.
4. Credit for a parallel course.
5. Credit toward the general education requirements.
6. No credit but exemption from the general education requirements.
7. A limit on the amount of credit awarded.
8. Unlimited credit awarded.
9. The award of credit dependent upon the successful completion of one or two semesters of college.
10. Advanced placement or the award of credit validated by departmental proficiency examinations.[15]

A questionnaire survey of AP policies and practices at 763 colleges and universities which received AP grade reports in 1963 showed that the variability in the relationship between student performance and college action on the AP examination had little to do with differences in numbers of AP candidates at the institution, geographic regions, or subject-matter fields.[16] An interview survey of AP policies at 63 colleges and universities selected to represent all participating institutions revealed that the vast majority of colleges visited have policies that enable granting of both credit and placement to candidates meeting locally defined standards of AP achievement. Every college visited allowed the granting of placement, but there was generally greater reluctance to grant credit than placement. Radcliffe and Hatch suggest that an opposition to acceleration often contributes to a conservative attitude toward the granting of credit for AP courses, but observe:

> Experience shows, however, that few students finish high school with enough advanced placement courses to accelerate their college careers to any large extent and that, of those who do qualify for as much as a full year's acceleration, many elect to stay in college four years.[17]

The interview survey revealed that AP grades of 4 and 5 are generally granted credit unless the institutional policy opposes granting credit. Grades 1 and 2 infrequently received either placement or credit, although ETS recommends credit for grades 2 to 5, and grade 3 revealed the widest policy disparity and ambivalence. The survey team found no standard process whereby decisions on AP candidates are made except in the rare situation of universitywide standards. The staff members interviewed in the 63 institutions indicated that they consider the essay portion of the AP exam to be most important in making decisions. The authors concluded that the impact of the AP program has varied from institution to institution and from individual to individual and department to department

within institutions.

While most students take advantage of the AP program for purposes of enrichment rather than acceleration, of the AP candidates graduated from Harvard by 1961, more than three out of four graduated in three years. In the fall of 1964 Harvard gave 191 entering students the option of sophomore standing on the basis of the AP examinations. Harvard is considered to be doing more with advanced placement than any other institution in the nation. Nonetheless, Harvard is quite ambivalent about providing the opportunity for a three-year B.A., and many faculty would apparently prefer that students spend two senior years or take graduate courses their fourth year, rather than graduate early.[18]

Several other procedures for improving curricular articulation between high school and college might be mentioned here. In the early 1950's, several experimental projects focused on early admission to college (age 16 or younger). Although the major experiment was considered a definite success,[19] few colleges or universities moved in the direction of admitting tenth or eleventh graders. The institution most interested in early admission was the University of Chicago, but currently even they accept a relatively small proportion of such students.[20] The Statewide Cooperative Program for Superior Students in Connecticut, administered by the University of Connecticut since 1955-56, is somewhat similar to the AP program. Superior high school students work under selected high school teachers on an approved program of work for full college credit. If the student enters an institution other than the University of Connecticut, the university will furnish him with an official transcript indicating credit and courses. Work has been offered in Chemistry, English, French, History, Mathematics, and Zoology; and programs are planned in Spanish,

Government, and Physics. The university makes no charge for the program. Another form of advanced standing involves permitting superior high school students to take regular freshman courses concurrently with their high school studies. The University of California at Los Angeles has one of the most extensive programs of this sort.[21]

The major advantages of programs of advanced standing appear to be the following:

1) Students can progress at more rapid rates.
2) Such programs stimulate and motivate superior students.
3) Communication between high schools and colleges is facilitated.
4) Such programs stimulate individual planning of student programs.
5) Such programs enable students to extend their collegiate studies to areas for which they might otherwise not have time.
6) Financial savings to students are possible if advanced standing leads to an earlier completion of the degree.[22]

Type 2) Examinations Upon College Admission to Waive Prerequisites to Advanced Courses for Lower Division Students

Most colleges and universities in the U.S. allow or sometimes require entering freshmen to take examinations in certain basic subject areas such as English Composition, Languages, and Mathematics. The purpose of such examinations is most frequently placement rather than credit, however, and while they could and perhaps should be used as credit-granting devices, these examinations will not be described here.

One of the oldest, most extensive, and most heavily researched programs of credit by examination in the U.S. is that at the University of Buffalo. Although the Buffalo program falls into both Types 1) and 2), for ease of exposition it will be described here. Like the AP program, the Buffalo program focuses solely on the superior student; unlike the AP program, the Buffalo plan does challenge the credit-hour system by

explicitly encouraging acceleration. Buffalo's program of examination for college credit was initiated in 1932 to improve high school-college articulation, to provide special opportunities for the superior student, and to enable superior students to complete their B.A.'s in less than the usual four years. From the inception of the program through 1961, a period of 29 years, the program was unusually well-publicized. Unfortunately, recent information is sparse, and the following discussion may not be up-to-date. The University is now a branch of the University of the State of New York and has been renamed the State University of New York at Buffalo. The catalogue indicates that Buffalo now participates in the CEEB AP program, and supplements this program by offering its own examinations for college credit to eligible students in certain areas not covered by AP. This suggests that the program has been reduced both in size and breadth.

While the major focus of the Buffalo program has been on anticipatory examinations for credit for graduating high school seniors, a survey covering the period from 1952 to 1955 showed the 45% of the examinations were taken by students after college entrance, while 55% were taken before college entrance. To be eligible to take the examinations, high school students must have New York State Regents averages of 82, with 87 in the subject of examination; a letter of recommendation from the high school principal or teacher; and more than the 16 high school units required for admission. This latter requirement is to insure that students do not get double credit. Students in college must have a quality-point average of 1.7 and be in the top one-third of their group to be eligible. The examinations are set and graded by members of the college department, and are offered only five fixed times during the year. The

grading scale is the standard A-F system. The examinations generally duplicate the end-of-course examinations of the corresponding college courses, and are of three hours length. Syllabi and sample examinations prepared by the faculty are available to students. Students taking the examinations as graduating high school seniors need not attend the University of Buffalo. A number of accredited colleges and universities have regularly accepted the examination credits. Students pay $5 for the privilege of taking each semester examination, but this fee is deducted from tuition charges for those students who enter the University of Buffalo.

By 1956, 1,700 students had taken more than 4,000 credit examinations. As of 1954, Mathematics and beginning language work constituted 60% of the credit examinations given at Buffalo. Other examination subject areas, in decreasing order of frequency, were English, History, Accounting, and College Science. The areas in which examinations for credit are most frequently requested are those in which there is considerable overlap between high school and college offerings. A 1952 study revealed that examination grades are generally high in Mathematics, lower in Languages, and lower yet in English, History, and Chemistry. Failures were rare in Psychology, Business Administration, Sociology, PE, Engineering, and Philosophy, and high in Economics, Physics, Biology, and Chemistry. A 1957 study indicated that in general, few exams were taken in the Social and Natural Sciences. Jones and Ortner found that for the students who took three exams or more, the median time and tuition saved was a half a year of college work. They also found that the syllabi were the most important means of preparation for the examinations. W. L. Barnette, Jr. reports that students who obtained nine or

more hours of credit by examination indicated that acceleration was the most important advantage of the program.

When the Buffalo program was initiated in 1932, it was expected that its success would encourage other institutions to initiate credit by examination schemes. One of the factors which indirectly aided the Buffalo program was the 1930 depression. The program became a motivating device for high school graduates who could not afford tuition but could obtain credit toward a degree.[23] For a variety of reasons, some of which have been discussed above, credit by examination programs focusing on acceleration did not catch on in the U.S. The few other programs described in the literature which entail the waiving of prerequisites to advanced courses and the granting of credit for lower division students deserve brief attention.

Ohio State University offers a program of credit by examination (EM credit) for examinations taken prior to or after admission. As of 1960, exams were offered in English, Mathematics, foreign languages, Health Education, Typing, and Shorthand. The level of achievement is set by the individual department.

The University of Illinois has a rather extensive program of proficiency examinations for credit. The proficiency examinations, which are similar to regular course examinations, are given each semester in courses normally open to freshmen and sophomores. No fee is charged for the examinations, and the grading system is pass-not pass. Entering freshmen are encouraged to take the examinations, but the following restrictions prevail:

1) Students must be in residence or registered in a correspondence course.
2) Students who have received credit for more than one semester of work in the subject in advance of the course in which the exam is requested cannot take the exam.

3) The exams may not be taken to raise grades or to remove failures in courses.[24]

The above descriptions provide sufficient illustration of the varieties of Type 2) programs offered by colleges and universities, where such programs are offered at all. Such programs are focused on superior students and are generally limited in practice if not in theory to a few departments and to a few lower division courses in the university. If the available information is correct, with the possible exception of Buffalo, apparently no institution has initiated a scheme of course credit by examination open to any significant proportion of lower division students or encompassing a wide range of lower division courses.

Type 3) Examinations for Lower and/or Upper Division Students as an Alternative to the Satisfaction of All Attendance, Papers, Mid-Terms, Finals, and Such Requirements of a Regular Credit Course

Given the dearth of examples of Types 1) and 2) examinations for credit, it should come as no surprise that Type 3) is little more than a hypothetical category. One word of warning should be injected here. Many college and university catalogues include statements such as the following:

> A student in good standing who is currently registered may qualify for course credit by examination. Application for such credit must be presented on a form, obtainable from the Registrar, to the dean of the college or school. Credit by examination may be applied for in any course listed in the current GENERAL CATALOGUE pertaining to the regular sessions at Berkeley, or in any other subject appropriate for inclusion in a University curriculum. [This statement is followed by a list of restrictions. From UNIVERSITY OF CALIFORNIA 1970-71 GENERAL CATALOGUE May 15, 1970, pp. 28-29.]

While detailed knowledge of credit by examination practices at U.C. Berkeley is not available at this time, one suspects that the above

statement is of the "on paper only" variety. It is therefore extremely risky to attempt to evaluate the extensiveness of credit by examination practices by relying on university catalogues, as some students of the subject have done. An accurate assessment would entail detailed information on actual institutional practices.

The most extensive Type 3) program is currently in operation in New York State. A grant from the Ford Foundation's Fund for the Advancement of Education enabled the New York State Education Department in 1960 to begin work on a program of credit by examination. In 1963, the New York State College Proficiency Examination Program [hereafter CPEP] was introduced. The purpose of the program is to enable individuals to obtain college credits or other educational advantages (meeting licensing or certification requirements, for example) by means of examination without formal classroom preparation. There are no prerequisites for taking the examinations; and anyone may take them, including individuals who are not residents of New York State. CPEP examinations are currently offered in the following 27 areas:

Accounting
American History
American Literature
Applied Music
Biology
Earth Science
European History
Freshman English
Shakespeare
French*
German*
Italian*
Russian*
Spanish*
Health I: Personal Health--Physical Aspects
Health II: Personal Health--Emotional Social Aspects
Health III: Public-Environmental Health
Fundamentals of Nursing
Maternal and Child Nursing, Associate Degree Level
Maternal and Child Nursing, Baccalaureate Level
Psychiatric-Mental Health Nursing
American Education, History of Communications and Education
Educational Psychology
Philosophy of Education
Teaching Methods for Foreign Languages

*Battery A: Language Skills
*Battery B: Applied Linguistics, Civilization and Culture, Professional Preparation

To avoid undue overlap with the College Entrance Examination Board's

College Level Examination Program, CPEP has discontinued the following examinations: Anthropology A and B, Calculus B, Criminology, and Engineering Graphics A and B.

In the first year of the program, only 200 candidates took examinations. During the period 1963-1969, 4,150 CPE's were taken in over 25 different subjects. In 1970 alone 5,650 proficiency examinations were given, more than had been administered in the entire past history of the program. Nearly 10,000 examinations have been given to date.[25] In recent years the program's main thrust has centered around three areas: the nursing sciences, foreign languages, and professional education. Of the 10,000 examinations taken to date, more than 5,000 have been in the nursing sciences, 2,200 in foreign languages, and 1,000 in professional education. In May 1971 CPEP will offer new examinations in the following areas: drug use and abuse, world health and population problems, environmental health problems and control, Afro-American studies, and Puerto Rican studies.

Successful CPEP candidates may satisfy teacher certification requirements in modern foreign languages, health education sciences, and in areas of professional education. Advanced foreign language students may satisfy degree or teacher certification requirements through successful completion of the Modern Language Association's Foreign Language Proficiency Tests for Teachers and Advanced Students, administered by CPEP. Nursing students may attain college credit or advanced placement in many of the hospital, associate, or baccalaureate degree nursing programs in New York State. Candidates can meet all subject matter requirements (36 course credits) for public school teacher certification in the Health Education Sciences by means of the CPE's in that field. As of 1971, the New York City Board of Education will use CPE's to validate the end-of-

course proficiency of public school teachers in the Board's inservice training program.

The CPEP examinations are offered twice a year, in October and May, at 36 college testing centers in New York State. The fee for each examination is $15. The State Education Department itself does not grant course credit. Decision as to whether or not to grant credit, and how much, is left with individual colleges and universities, although CPEP makes recommendations as to how much credit should be granted for each examination. The CPEP brochure states that most institutions in New York State now grant credit for passing grades in the examinations, subject to the following limitations:

1) Students must be enrolled in a college or university in order to apply for CPEP credit.
2) CPEP credit will not be awarded in a subject below the level of work already attained by the student.
3) In some areas, particularly the sciences and technical areas, a college will expect the candidate to demonstrate a degree of laboratory skill and experience.
4) Credit granted for CPEP is generally not included in a student's overall grade point average or in any quality point system.
5) The transcript of the student who has been awarded CPEP credit will usually carry the notation that credit was granted for successful performance on a CPE.

The brochure also states that CPEP has been widely accepted outside New York State, and that the examination program in the nursing sciences may be expanded across state lines. Promotional material on the program is distributed to all of the colleges and universities, libraries, and various community organizations and programs in New York State. CPEP also has several radio and television spot announcements and newspaper announcements to inform prospective candidates about the program. The brochure notes that the person seeking credit by examination should be prepared to perform above the minimum expected for the on-campus student.

Generally, colleges require that a minimum CPE grade of C be attained before credit will be granted, but some colleges require a grade of B or better before they will grant credit. In no case can an individual earn all of the credits required for a degree without classroom attendance. The New York State Board of Regents has recommended that no more than half of the credits required for a degree be granted on the basis of examination.

The examinations are generally written and graded by committees of outstanding faculty members from New York State colleges and universities, under the guidance of CPEP staff and specialists in the Bureau of Higher and Professional Educational Testing. Currently, almost 200 faculty members serve as consultants to the program. In a few instances, the examinations are obtained from other examining agencies and approved by the faculty committee in the particular subject. Most of the examinations cover material included in one or more semesters of a regular college course and measure the knowledge expected of a student who completes the course in college. The examinations vary in format and may include multiple choice, short answer, and essay and problem questions. Most are three hours in length. The examinations are graded on the traditional A-F scale. The CPEP brochure provides a brief outline of the subject-matter of each examination and suggests appropriate study aids. Bibliographies of recommended reading materials for 11 of the examinations have been prepared by the faculty members responsible for the development of the examinations. These bibliographies are available free to prospective candidates upon request.

The only other example uncovered of a Type 3) program is limited to one school in a university but suggests the potential of examinations for

credit. The University of Wisconsin School of Education has offered since at least 1959 a program of teacher certification by examination for undergraduate and graduate students. Students may satisfy all or a portion of the requirements of the undergraduate programs in the School of Education by examination without classroom attendance. A series of written tests cover liberal education, subject fields to be taught, courses required by statute, and professional education. Students get course outlines from the departments, and the departments set, administer, and grade the examinations. The usual courses carried by examination are basic courses involving the departments of Educational Psychology, Educational Policy Studies, and Curriculum and Instruction. A student must have a 2.75 grade point average to take the examinations. A classroom observation arrangement enables exams for credit even in student teaching. This program is particularly interesting since teacher-training program experimentation has generally been limited by accrediting associations, state requirements and such.

Type 4) Examinations to Demonstrate the College Level Ability of Non-traditional Students (Military, Older Students, Foreign Students, Transfer Students)

In 1945 the American Council on Education [hereafter ACE] established the Commission on Accreditation of Service Experiences [hereafter CASE] to assist educational institutions in evaluating service experiences. Since 1945 CASE, in conjunction with the United States Armed Forces Institute [hereafter USAFI], which is headquartered in Madison, Wisconsin, has developed instructional materials in academic subjects through the second year college level and in technical and vocational courses at the high school and junior college levels, and tests and examinations to

measure the learning acquired and to provide high school or college credit. These materials and examinations are made available to all the armed services. Three programs are involved: the General Educational Development Testing program (GED); the Comprehensive College Testing program (CCT); and the USAFI courses and tests. The GED program tests in high school subjects and will not be discussed here, although the GED tests have been by far the most widely used. The CCT program tests on the college level, and its tests are constructed and standardized nationally by ETS. The purpose of the tests

> is to provide colleges and universities with a useful, flexible program of achievement-testing to meet the needs of qualified adults who wish to continue their education at a level consistent with their abilities, in order to meet licensing requirements and to qualify for better positions.[26]

There are two types of CCT tests: General Examinations and Subject Examinations. The General Examinations provide a measure of achievement in English Composition, Humanities, Mathematics, and Social Sciences-History. They sample the individual's competence in required subjects for the first two years of college. The English Composition test has a 60-minute time limit; the others have a 75-minute time limit. The Subject Examinations cover widely taught lower-division undergraduate courses: Analysis and Interpretation of Literature; General Chemistry; Introductory Calculus; Introductory Economics; Tests and Measurements; and Western Civilization. The examinations consist of a 90-minute multiple-choice section and an 80-minute essay, which is optional. CASE provides educational institutions with recommendations on the amount of credit to be awarded for successful completion of the examinations. However, the CCT tests are much more widely used and recognized in the armed forces than in civilian life. They are apparently used primarily for purposes of

evaluation with reference to job placement, promotion, and transfer within the military services.

The USAFI program provides servicemen on active duty with an opportunity to continue their education through correspondence courses and group courses, the successful completion of which results in CASE recommendations for the awarding of college credit. USAFI operates around the world wherever there are enough people to take a particular course. Since the USAFI program relies upon the traditional classroom hour measure rather than on credit by examination alone, it will not be detailed here except for the following list of college-level courses offered:

English	Sociology
Literature	Science
Mathematics	Business Administration
Social Studies	Classical and Foreign Languages

The newest program offering opportunity for college credit by examination is the College-Level Examination Program [hereafter CLEP] initiated by the CEEB on a nationwide scale in late 1966. The CLEP program is explicitly focused on persons whose learning experiences have taken place primarily outside formal college classrooms--on nontraditional students such as military personnel and adults--and the program deemphasizes acceleration. The CLEP program offers two types of examinations: the College-Level General and Subject Examinations and the Brief Tests. The tests are designed to measure knowledge acquired through nontraditional methods of study as well as through a formal college curriculum. They are not based on the course or courses of any particular institution, but measure basic core elements common to many different colleges and universities. The examinations are written by teachers from two and four year colleges, and where appropriate by an individual from a licensing agency or from business or industry. The fee for the General Examination

and for each Subject Examination is $5 for institutions and $15 for individuals. The tests are open to anyone and are given during the third week of each month at 59 test centers across the country. They are also given by institutions to their enrolled students. Colleges and other organizations using the examinations set their own individualized standards; each decides its own passing score and the way the exams will be used, as well as the amount of credit potentially obtainable.

The General Examinations are composed of five separate multiple-choice tests, varying from 60 to 75 minutes, in English Composition, Humanities, Mathematics, Natural Sciences, and Social Sciences-History. The Subject Examinations and the Brief Tests are tied more closely to a specific course or subject and are intended to measure an individual's achievement in that particular area. Each test contains a 90-minute multiple-choice section of 100 questions graded by ETS and an optional essay portion which is sent ungraded to the institution itself. The following 27 subject tests are now available:

American Government
American History
Analysis and Interpretation of Literature
Biology
College Algebra
College Algebra-Trigonometry
Computers and Data Processing
Educational Psychology
English Composition
English Literature
General Chemistry
General Psychology
Geology
History of American Education
Human Growth and Development
Introduction to Business Management
Introductory Accounting
Introductory Business Law
Introductory Calculus
Introductory Economics
Introductory Marketing
Introductory Sociology
Money and Banking
Statistics
Tests and Measurements
Trigonometry
Western Civilization

Seven additional subject tests will be made available during 1971 and 1972. The Brief Tests are 45 minute versions of the Subject Examinations and are intended primarily as measures of group achievement. Only four are currently available, and they are offered only to colleges for use with

their own students. While syllabi are not available for the General and Subject Examinations, two CEEB publications provide general information on the examinations, descriptions of the tests, and sample questions. The CLEP General Examinations are scored on the standard CEEB scale from 200 to 800. The Subject Examinations are scored on a scale from 20 to 80.

While the CLEP program is still quite young, some information about its reception by academic and non-academic institutions is available. The major use of the CLEP tests is only indirectly academic. From July 1965 through November 1969, more than 703,000 General Examinations were administered to military personnel through USAFI. (The Subject Examinations are not available to the military.) Only a portion of the above individuals will attend college or university. The second major use of the CLEP tests is by individual institutions of higher education for institutional testing programs. During the 1969-1970 academic year, an estimated 42,400 candidates took 186,000 institutionally-administered tests. It would appear that the primary purpose of such institutional testing programs is the evaluation of institutional performance rather than the evaluation of individual performance for college credit. For example, the biggest institutional use of CLEP to date is the requirement by the Regents of the University System of Georgia, beginning in the fall of 1969, that all junior and senior colleges in the system will administer the CLEP General Examinations to all rising juniors. The 27 institutions involved will administer and pay for the tests, and the results will be used for individual counseling and local institutional evaluation.

Individual student use of the CLEP program for college credit by examination has thus far been minimal. Only 5,300 individual candidates were estimated for the 1969-70 academic year, only 450 colleges and universities have indicated any willingness to consider awarding credit on

the basis of the CLEP examinations, and policies on the amount of credit available and on minimum acceptable scores vary considerably. While it was expected that business and industrial firms, quasi-governmental agencies, and licensing and certification bureaus would use the CLEP tests for licensing, job advancement, and such, no statistics on such uses are available. Just why the CLEP program has attracted so few individual candidates is unclear. It may have to do with lack of publicity, the traditional university aversion to granting credit by examination, the newness of the program, or the fact that the examinations are nationally standardized and therefore fail to take account of individual institutional differences.

Aside from the military, the largest group of so-called nontraditional students are older students, and the most common provisions for adult higher education in the U.S. have been extension and correspondence courses. Since most such course arrangements, including those at UC Berkeley, rely entirely on the class-hour system of credit measurement or on the completion of a sequence of written course assignments over an extended period of time, and do not offer credit by examination only, just the programs which do have provision for credit by examination will be discussed here. It is interesting to note that even though the UC Berkeley extension and correspondence (newly renamed "Independent Study") programs are highly conventional in design, neither offers the opportunity to earn a degree entirely through such courses.[27] Extension and correspondence courses are not accepted as part of the residence requirement of the University, and no graduate courses are offered. UC correspondence courses are indirectly relevant to an investigation of credit by examination, since each student is provided with a syllabus study guide which contains reading material

supplementary to the required tests, as well as the required writing assignments. England's new Open University, while highly innovative, also relies on the completion of a certain number of assignments and hours in the classroom in the awarding of credits and degrees.

The available literature describes only a few programs of credit by examination for adults, and these are all quite small and experimental. This is somewhat strange, since adult education is an obvious candidate for such programs. The University of Oklahoma offers the following program for adults leading to the degree of Bachelor of Liberal Sciences:

> Adults are accepted on the basis of a series of examinations that disclose the amount of work a student should take in the fields of social science, natural sciences, and humanities. There are no courses, no classes, and no credits. Students read and have conferences. There is a two to four week colloquium in each field followed by an examination. Upon completion of the examinations, students are awarded degrees. No maximum or minimum time is required.[28]

In 1954 Brooklyn College began an experimental B.A. degree program for adults, aided by a grant from the Center for the Study of Liberal Education for Adults. The program seeks to equate life experience with university education, and to give college credit for such experience. Each adult student is directed into a program of studies which may include special tutorial services, independent study, exemption examinations, classroom or seminar attendance, and a formal thesis or comprehensive examination. Adults may complete the equivalent of all the prescribed general education courses in the form of four tutorial seminars in Humanities, Communication, Social Science, and Science. Exemption is available in parts of these seminars on the basis of examinations. Two methods other than class attendance are available for meeting the remaining requirements for the B.A. One method is credit for specific elective courses in which

examinations reveal that individuals have mastered both content and objectives through experience. The other is individual tutorial service provided in those cases where adults have not entirely mastered the content and objectives but have learned enough to justify acceleration.[29] The Brooklyn program is clearly experimental--as of 1962 there had been 1,340 applications, of which only 300 were accepted. The departments in which most experience credits have been granted include English, Art, Music, Economics, and Speech and Theater. Bernard H. Stern and Ellswerth Missall observe:

> The recommendations submitted by faculty representatives revealed that courses judged creditable without further preparation were those which, like English Composition or Sculpture, were primarily concerned with skills. Almost all the informational courses like Greek, Roman Classics or Principles of Economics, were deemed creditable only after a variable period of independent study.[30]

Type 5) Examinations Covering More than One Course and Degree by Examination Only

The oldest, and one of the few, programs of degree by examination has been offered through the University of London for 135 years. Until 1900, no instruction was offered and only External Students were admitted. In 1900 Internal Students were admitted for the first time and teaching functions were introduced. The University of London offers the following degrees by examination for External Students: B.A. General; Bachelor of Science; LLB; B. Mus.; M. Mus.; Medical and Dental degrees; M. Phil.; LLm.; M.Sc.; and Ph.D.'s in Theology, Arts, Laws, Music, Medicine, Science, Engineering, and Economics. Any individual with the equivalent of a British General Certificate of Education residing in one of the 61 countries where the examination scheme is available may apply for and take

examinations for the various Bachelor's degrees. External Students are expected to be registered for three academic years, but students with previous advanced studies may be granted a reduction in the length of the required period of registration. External Students need not be enrolled in any institution of higher education while working on the degree, but of 35,000 External Students enrolled in 1970-71, 30,000 were working in other non degree-granting institutions and only 5,000 were private, unaffiliated students.

Application is made to the appropriate overseas authority and must be accompanied by the required fees. The fees, in American money, amount to $36 for registration, $55 for the B.A. General examination, and $20 for the supplementary subject examinations. Some departments require the demonstration of competence in one or two languages, and a few require course work. An External Student must have a University of London Bachelor's degree to take a Master's degree, and to take a Ph.D. degree he must have an Internal or External Bachelor's degree from London or an Internal Master's degree from London. All degree examinations are given once a year in the spring.

Candidates for the B.A. General degree must take examinations on the same occasion in three of 59 subjects (41 of which are languages). The subjects, excluding the languages, include:

Aesthetics	Geography	Logic
Anthropology	History	Pure Mathematics
Economics	History of European Art	Applied Mathematics
English	Icelandic Studies	Music
Ethics	Law	History of Philosophy
Psychology	Theology	Prehistory of Western Europe

Candidates for the B.Sc. must take examinations on the same occasion in three of the following 17 subjects:

Anthropology	Computation	Physics
Biology	Geology	Physiology
Botany	Applied Mathematics	Psychology
Chemistry	Mathematical Method	Statistics
Geography	Pure Mathematics	Zoology
Astronomy	Biochemistry	

The examinations are three-hour written papers, with supplementary orals for modern languages. Failure in one examination constitutes total failure, and all three subject examinations must be retaken. The exams are prepared and marked mainly by members of the academic staff of the University of London. Syllabi are available for all subjects, and in some cases they include the study of prescribed texts. The Set Books Appendix to the REGULATIONS FOR EXTERNAL STUDENTS includes the lists of books for each subject set for the next two years, and those provisionally set for three and four years hence. The syllabi are basically the same as those for Internal Students. Some advisory services are available through the Advisory Service for External Students.

The External system is administered by the External Registrar and a staff of 31 in the External Department of the University. Overall control is exercised by the Council for External Students which is one of the five Statutory Committees reporting to the Senate of the University. Proposals come before the Council from numerous Boards of Studies in the different specializations.

In an article in the Winter 1970-71 issue of the COLLEGE BOARD REVIEW, Alan Pifer notes that the regular faculty at the University of London have become increasingly resistant to the examination program for External Students, and that part-time examiners have had to be recruited. He also states that the failure rates for External Students are very high, especially in Law and Economics, and for non-Britishers.[31]

The University of London degree program for External Students is one

type of comprehensive examination scheme, if one defines a comprehensive examination as any examination covering subject-matter greater in scope than a single course. In contrast to Great Britain and the continent, comprehensive examination schemes have never caught on in the U.S. While a 1955 study by Paul L. Dressel revealed that 65% of 466 liberal arts colleges reported the practice of using comprehensive examinations, in most cases students are admitted to such examinations only after completion of a stipulated number of course credits in the areas involved or near the close of the total program. Lanora Lewis observes:

> Thus, the influence of these examinations on the credit system has been limited by the fact that, as currently used, they measure the end product rather than the stages of progress.[32]

There are several reasons why comprehensive examination schemes have not been well-developed in the U.S. First, such schemes pose problems in terms of inter-institutional communication. Second, such schemes frequently involve a separation of instructional and examination functions, an arrangement which has never been popular in the U.S. Comprehensive examinations can in theory challenge two assumptions: 1) That all students should take the same number of courses; 2) That all students should spend the same number of hours in the classroom. Credit by examination programs limited to individual courses challenge only the second assumption.

Undoubtedly the best-known program of comprehensive examinations which encourages acceleration and challenges the traditional credit-hour scheme has been that at the University of Chicago. The Chicago College Plan, introduced in 1931, explicitly incorporated the notion that academic degrees should be based solely on educational attainment and not at all on course credits or residence requirements. The original plan involved the preparation of detailed syllabi for each of the four basic introductory

courses. Comprehensive examinations for each course were prepared, administered, and graded by a relatively independent Board of Examiners, thus partially divorcing the examination function from the instructional function. Students could take the examinations whenever they felt prepared, regardless of classroom attendance, and performance in the classroom had no influence on the final grades. The examinations included all types of questions: multiple-choice; essay; problem; supplementary orals.

A number of changes have been made in the plan in the past 40 years. From 1937 to 1950 Chicago experimented with a four-year program devoted to general education, encompassing the last two years of high school and the first two years of college. At the end of the four-year period, the student was given a regular B.A. The college during this time offered only courses in general education, in which a minimum of fourteen year-long courses over the four-year period were required for the B.A. degree. This program was considerably less than successful in practice. Daniel Bell states that probably no more than 20% of the college population were early high school entrants, even at the peak of the program. A number of institutions, especially graduate schools, refused to recognize the degree as a true B.A. After the departure of Chancellor Robert M. Hutchins in 1950, a full four-year B.A. in general education was introduced for students with a high school diploma. Throughout this period, students could go through the college at their own pace by taking comprehensive examinations. Bell, however, describes a consistent criticism of the examining system:

> Since the instructor did not usually read examination papers..., the difficulty of testing six hundred or more students in a single course often led to undue reliance on multiple-choice, machine-graded examinations, rather than essays.[33]

Christopher Jencks and David Riesman observe that the original

arrangement whereby students could earn B.A.'s by passing a certain number of comprehensive examinations irrespective of their formal credit hours displeased many graduate schools, including many of the graduate departments of the University of Chicago itself. This in spite of the fact that in the authors' view, "the College made a more impressive showing (more alumni in graduate and professional schools) than almost any other undergraduate institution with similar students."[34]

In 1957-58 a reorganization of the College resulted in the introduction of a major system and a regular four-year B.A. program. As of 1959, four major types of tests were used to evaluate competence: scholastic aptitude tests; tests of previous academic achievement (placement tests); advisory achievement tests; and final comprehensive examinations on achievement in particular parts of the general education curriculum. In the program of general studies covering the first two years of undergraduate work, all students were required to demonstrate competence in eight basic areas of study. This could be done by performance either in placement tests taken when the student entered the College or in examinations taken after instruction in the field. Successful completion of a placement test relieved the student of the comprehensive examination requirement in that field, and resulted in acceleration. However, the proportion of students accelerating has been quite small. In the academic year 1960-61, only 6% of the entering students earned two quarter's worth of acceleration credit, and only 3% earned a full year or more. Thus in this plan, the placement tests represented the major means of acceleration, while the comprehensive examinations, although still generally unrelated to course performance, were linked to specified periods of classroom instruction.

Bell reports that yet another new scheme was to go into effect at Chicago in the autumn of 1966. Under the new plan, the College would be divided into five collegiate divisions, physical science, biology, social science, humanities, and "civilizational" studies. Students were to take four general courses in common in their particular college. No information has been secured on examination practices for this new plan.

The Basic College at Michigan State University, organized in 1944, offered a program of acceleration through comprehensive examinations similar to the old Chicago Plan. Originally, year-end comprehensive examinations unlinked to classroom performance were constructed for seven basic courses. In 1953, the program was revised to include only four basic courses, and separate comprehensive examinations were designed for each of the three terms of the courses. All students began each course, but after the first term those who had demonstrated high competence could attempt to accelerate by taking the appropriate comprehensive exam or exams. From 1944 to 1955, approximately 10% of the entering freshmen received some credit through examination. Apparently, however, acceleration with the aim of completing the degree earlier has not been encouraged. Paul Dressel observes:

> Even those students who accelerate in several Basic courses do not graduate any earlier; nor do they give earlier graduation as a reason for wanting to accelerate.[35]

The General College program at the University of Minnesota, begun in 1932, is sufficiently similar to the Michigan State program that it needs no discussion here.

As a final example of comprehensive examination programs, Antioch College as of 1950 gave five comprehensive examinations to evaluate the broad outcomes of 14 required courses. Students could earn credit by

examination for nine of the 14 courses. Each test took about six hours, and was designed by faculty members. The Antioch program was started in 1941, and the average senior in 1947-48 eliminated four required courses by examination. Catalogue descriptions suggest that over the years, the Antioch program has undergone changes similar to those of the Chicago College Plan. Currently, the general education program is divided into Levels I and II, both focusing on three broad subject areas: arts and humanities; physical sciences; and social sciences. Upon entrance, students are required to take achievement examinations in the three Level I subjects. Both placement and credit are awarded for successful completion of the exams. Students must pass the examinations by the end of their third year. The examinations may be taken three times, but only once in an academic year. A single Level II achievement examination covers all three areas, but students must have taken a Level II course in each area before attempting the examination. No mention is made in the 1970-71 Antioch catalogue of comprehensive examinations. It would appear, therefore, that the achievement examination plan has supplanted the comprehensive exams.

The only major degree by examination program in the U.S. is currently being developed in New York State. In February 1971, the New York State Education Department received grants totaling $800,000 from the Carnegie Corporation and the Ford Foundation to establish a Regents' external degree program enabling qualified individuals to earn undergraduate degrees by means of independent study. Regents' external degrees will be available to all who qualify, without regard for such considerations as age or residence. On the baccalaureate degree level, a series of comprehensive written and oral examinations will be developed and used to validate an

undergraduate major in a subject field traditionally offered by colleges and universities. These major sequence examinations will be prepared and rated by faculty committees drawn from institutions of higher learning in the state. If general education requirements are established, these may be met by regular undergraduate study, proficiency examinations, or otherwise, as determined by faculty committees. The tests will be administered to graduating seniors at representative colleges in the state to establish appropriate standards of performance. A similar procedure will be established to evaluate study leading to associate degrees.

Initially, the State Education Department plans to prepare major subject tests in the field of Business Administration. Examinations in this field may be ready for the public by late 1972. It is expected that appropriate study guides will be prepared to assist candidates for external degrees. In addition, educational resources such as television, radio, extension services, museums, libraries, research laboratories and the like will be explored and utilized in developing the external degree program.

Type 6) Examinations, Generally for Graduate Students, to Satisfy Non-Credit Competence Requirements Such as Language or Mathematics

Examinations to satisfy non-credit competence requirements are sufficiently familiar to require little elaboration. Since such examinations result in neither placement nor credit, they are of only indirect relevance to the issue of credit by examination. It is interesting that such exams have been generally accepted by graduate schools across the nation. One suspects that such ready acceptance has precisely to do with the fact that the awarding of credit is not involved. The literature offers no examples of credit by examination at the graduate school level,

although many institutions provide such opportunities for the superior or nontraditional student. It is interesting to note that most institutions, in admissions considerations, rely heavily on national standardized tests such as the General and Subject Graduate Record Examinations. In a number of institutions and/or departments, the results of such examinations are considered more important than the undergraduate record. At least graduate schools are not complete strangers to the notion of measuring competence in terms of something other than hours spent in the classroom.

While all the major programs have been reviewed, the above descriptions are illustrative rather than exhaustive of credit by examination. practices in the U.S. No systematic evidence is available on the actual extent to which programs of credit by examination are currently in operation.

Appropriateness of Various Subject-Matters to Credit by Examination Programs

It was suggested above that in general, the most frequent applications of credit by examination schemes are in those areas where there is considerable overlap between high school and college offerings--in skill subjects such as Languages and Mathematics. These competencies are probably also the easiest to measure by examination alone. A comparison of the offerings in the AP, N.Y. CPEP, and USAFI programs indicates that English Literature, Chemistry, History, Biology, and Physics are also likely candidates for credit by examination. Lewis reports a 1959 study of credit by examination in 300 four-year colleges and universities in the North Central Association:

> In order of frequency, the departments most often mentioned as using credit examinations were Languages, Mathematics, English, Chemistry, Biology, Music, Business and Secretarial Practice, and Speech.[36]

An ACE report on COLLEGE TESTING suggests that both placement and credit by examination activity is greater in Languages and Mathematics because success in subsequent courses depends directly on skills built in earlier courses. It is interesting to note that the subject-matter areas for placement by examination are generally the same as those for credit by examination. The ACE report notes several problems limiting the use of credit by examination in the Natural Sciences: 1) there are a variety of science offerings in many institutions, ranging from no background to advanced knowledge; 2) science courses may require pre-requisites from other disciplines. In addition, laboratory or practical tests may be necessary supplements. The report observes that the limited use of credit by examination in the Social Sciences and Humanities relates to the fact that these areas are much less likely to have a standard sequence of courses, each a prerequisite for the one following. Individual courses in the social sciences and Humanities are much more likely to be self-contained. Evidence from other literature supports this notion. Dressel reports that very few examinations for course credit in the Humanities were requested at Michigan State. In a 1940 discussion of the Chicago Plan, Chauncey S. Boucher notes that special problems emerged in preparing the comprehensive examinations in the Social Sciences and Humanities. And Jones and Ortner mention extreme fluctuation in the Buffalo English and History syllabi from year to year, suggesting that the faculty were having difficulty agreeing on the subject-matter to be tested by examination.[37] A study of the scores of servicemen on the CLEP General Examinations found that the Humanities and Social Sciences-

History tests are responsive to the accumulated value of life experience. The oldest age group received the highest mean scores, the youngest group the lowest scores.[38] If this study is correct, then one would expect 18 year-old college freshmen to be relatively less advanced in the Humanities and Social Sciences than in other areas. Indirectly supporting this suggestion, a 1961 study of 131 members of the Association of University Evening Colleges and the National University Extension Association (dealing mainly with adults) found policies on granting both placement and credit to be more liberal for the liberal arts than for technical courses.

The above analysis suggests that the potential for a wide application of examinations for course credit, covering most if not all undergraduate courses, is limited. However, the new CLEP program offers 27 individual course subject areas by examination, and the University of London offers 35 disciplinary areas (excluding the 41 languages) for the B.A. General and B.Sc. examinations. Therefore, it would appear that a somewhat more extensive use of credit by examination is feasible.

Attitudes of Faculty, Students, Administrators, and Relevant Inter- and Extra-Institutional Organizations Toward Credit by Examination

While the major advantages of credit by examination schemes have been outlined above, a brief review and a few additions are appropriate here before faculty and other attitudes are discussed. The previous analysis has suggested that certain potential advantages of credit by examination may only be realized if programs place an emphasis on acceleration. The major potentials of credit by examination alone include:

1) Greater flexibility in individual institutional curricula, requirements, and such.
2) A variety of possibilities for educational enrichment: spending the equivalent of two senior years; taking graduate work the senior year; broadening the undergraduate experience in general.

3) The provision of a measure of achievement rather than of time spent, thus enabling students to avoid repetition of materials already covered.
4) Recognition of diversity in students' experiences, abilities, potentials, and objectives (for nontraditional as well as regular students).
5) Upgrading of the college or university curriculum.
6) The attraction of superior students to colleges and universities.
7) Better articulation between high school and college curricula.

When credit by examination emphasizes acceleration, all of the above potentials except 2), enrichment, may be realized, plus:

1) A saving of time and money for students.
2) A possible saving of faculty time and university resources.

In other words, a combination of credit by examination and acceleration may provide greater potential in terms of saving time, money, and resources, but it presumably limits the possibilities for enrichment. The actual extent to which schemes of acceleration and enrichment in practice conflict has not been investigated. When acceleration is not emphasized in credit by examination programs, as with the AP and CLEP programs, students presumably take the full four years to the BA and graduate with surplus credits.

Attractive though the above potentials might seem, in fact neither credit by examination nor acceleration schemes have been widely adopted in the U.S. The major obstacle to such schemes appears to be the negative attitudes of faculty members, rather than of students or administrators. It has been suggested above that faculty are most likely to accept examinations for placement, less likely to accept examinations for credit, and least likely to accept examinations for credit where the emphasis is on acceleration. It is unclear if objections to acceleration have limited the development of credit by examination schemes, if objections to credit by examination have limited the development of programs of acceleration,

or if objections to both intertwine and support one another. Whatever the case, the literature indicates that the following are the most frequently expressed faculty objections:

1) Credit by examination, with or without acceleration, poses problems for transfer students, since other institutions may not accept such credit.
2) Credit by examination, with or without acceleration, may conflict with preprofessional and graduate school requirements or with state licensing and certification requirements.
3) National programs of credit by examination (such as AP, CLEP, CCT) arouse fears of an imposed national uniformity in courses covered by such programs.
4) When the better students are taken out of their regular classes through credit by examination, the faculty and students in the regular classes will suffer.
5) Credit by examination involves the sectioning of very able students apart from the others, which violates certain supposedly democratic notions about education.
6) Students could sometimes get higher grades by taking the course rather than taking the examination alone.
7) Some students who skip the freshman year through credit by examination and acceleration may not have backgrounds in certain subjects which normally begin in college, such as Philosophy and Economics.
8) College teachers frequently feel that work done during high school or through independent study, or knowledge acquired as the result of life experience, cannot be the equivalent of college course work.
9) Lower division students are not mature enough to accelerate through credit by examination.
10) College life involves social and emotional intangibles which should not be missed through acceleration.
11) Advanced Placement and such schemes may undermine the function of liberal arts colleges by blurring the lines between high school and college. Instead of granting credit for high school courses that are freshman level, the level of freshman courses ought to be raised.
12) Certain disciplines and/or specific courses (most frequently the faculty member's own) are sufficiently unique that knowledge cannot be measured by examination alone.
13) National programs of credit by examination may conflict with the diverse standards and objectives of individual institutions.
14) Acceleration through examination may unduly affect initial choice of major or may make changes in fields of concentration difficult, or result in premature specialization.
15) Acceleration through credit by examination may result in sacrifice of breadth and depth of study.
16) By not attending classes, students miss certain things in their general education, such as:

a) a systematic coverage of subject-matter;
b) supporting data, material not contained in a regular textbook but furnished by the professor;
c) enthusiasm and deeper points of view through interaction with faculty and other students.

17) Credit by examination places undue emphasis upon the certification function in higher education.
18) Credit by examination undermines class-wide solidarity among students entering in the same year.
19) Where standardized examinations for credit are used to test the competence of large numbers of students, as in certification for nursing or teaching, classroom instruction and/or independent study may come to be oriented simply towards passing the examination, rather than towards the mastery of a body of subject-matter.

Rejoinders may be made to some of the above objections. Those focusing on basically administrative problems, such as transfers or pre-professional requirements (1 and 2), have presumably been resolved by a number of major institutions (Chicago, Buffalo, Harvard) and are therefore probably surmountable. Fears of imposed national uniformity seem exaggerated (3). The quite general faculty acceptance of honors and independent study programs contradicts objections 4 and 5. If students want higher grades, they can simply take the course (6). Objections 7, 8, 9, and 10 relate to a common faculty assumption that students must demonstrate four years of "institutional endurance" to deserve the B.A. Empirical evidence challenging these objections will be presented in the next section. The criticisms contained in 11 and 12 relate to general issues in American higher education, and while they deserve attention they will not be tackled here. The final seven objections are important, but little evidence seems to be available to assess their validity. A few words might however be said in reference to the last objection, (19). Problems have definitely arisen in those arrangements where instruction and examination functions are separated, as in degree examinations in many European universities, in the New York State Regents

high school examinations, in the Chicago College Plan, and perhaps in the AP program. While such programs may improve the quality of relations between faculty and students, they may also impair the quality and content of instruction, especially when faculty have no knowledge of the details of the examination. Faculty and students alike may come to be motivated by the desire for success in examinations, rather than by the desire to achieve intellectual competence in a subject. This is clearly also a risk with programs of credit by examination alone, and deserves attention.

Probably the most typical faculty objection might be expressed in the following way:

> Awarding credit by examination in other areas or courses is perhaps alright, but <u>my</u> field and/or course is unique.

Were this attitude confined to a few disciplines or courses, it would pose fewer problems. However, it would seem to be very generalized, and consequently creates serious obstacles to the initiation of credit by examination programs. Implied in this objection is the notion that the knowledge acquired in certain courses or even entire disciplines cannot be adequately tested by available examination instruments. The intertwining of these arguments with general objections to credit by examination and/or acceleration, coupled with the absence of any systematic empirical work on the relative appropriateness of various fields and/or courses, or on various testing instruments, for credit by examination, makes it very difficult to assess the validity of the arguments.

One might suggest that faculty attitudes or perceptions are one thing, while their actions are quite another. The available literature is inconclusive on this point. Several studies of the AP program suggest that both faculty and administrators are much more likely to approve of and participate in credit by examination programs after they have had some

experience with them, and that the more AP students enrolled at an institution, the greater the acceptance of the program by faculty and administrators. Participation in the AP program, however, since it is an extra-institutional arrangement, is not at all the same thing as participation in the initiation and operation of an intra-institutional program. One would expect that faculty with extensive experience in the AP program would be more open to other sorts of credit by examination schemes, but there is no evidence on this. Virtually all of the literature on credit by examination programs, whether national or individual institutional, reports considerable faculty objection upon the initiation of the program. Most follow-up studies indicate fuller acceptance eventually if the program endures over a number of years. Nonetheless, after the Buffalo program had operated for over 20 years, Jones and Ortner reported that only 60% of the faculty approved of the program, 20% objected to credit by examination, and 20% had no opinion.

Relatively little information is available on the attitudes of students and administrators towards credit by examination. Most empirical work has focused on faculty attitudes or on follow-up studies of objective attributes of students (GPA, attrition rates, and such). This material will be discussed in the next section. Marie Flesher and Sidney Pressey report a 10-year follow-up questionnaire study of 112 women students at Ohio State University who completed a four-year undergraduate program in three years or less in the period from 1941 through 1945. The women were not involved in a special program, and credit by examination was only one means of acceleration. The women's judgments of acceleration were the following:[39]

Percentage who felt that accelerated programs

Were a strain on health	7
Prevented best school work	12
Undesirably limited social life	9
Were a desirable challenge	62
Desirably saved time	79

Marie Wagner conducted a questionnaire study of 140 University of Buffalo students who had earned nine hours or more of college credit by examination. Students were asked to give their judgments of the advantages and disadvantages of earning college credit by examination. The most frequently mentioned advantage was time saved (80%). Twenty percent explicitly mentioned saving money, and a significant number of others implied this in their responses. Ten percent said that earning credit by examination had prestige value in impressing future employers, graduate school admissions boards, or military examining boards. Almost half of the women said that success in examinations for credit gave them feelings of security, confidence, and accomplishment which motivated them in their future academic work. Thirty-six percent of the students mentioned educational advantages such as the opportunity to enter advanced courses early, to concentrate on subjects they enjoyed, or to start tutorial work early. Wagner counted 326 advantages listed, as opposed to 19 disadvantages. The major disadvantages included:

1) Missing a thoroughly well-rounded education
2) Pressure in high school or college
3) Missing contact with instructors in courses completed by examination only
4) Failure of examinations to cover the course content completely
5) Missing the opportunity to gain intellectual maturity
6) Not belonging to any class group

To determine student attitudes towards the AP program, in 1966-67 Patricia Casserly conducted an interview study of 252 ex-AP students at 20 U.S. colleges and universities and of over 350 upperclassmen and over

50 freshmen who had been AP candidates. Over 90% of the students said that the AP courses had been the most valuable of their high school courses. Almost 90% indicated that the AP experience had heightened their interest and motivation in college courses and in continuing their education beyond the B.A., and had increased their self-confidence. Due to institutional polities, about half of the students interviewed had been granted neither placement nor credit for their AP work, and these students expressed disappointment with such restrictive policies. Of those who received placement and/or credit, over 90% felt well-prepared for advanced sequent courses and over 80% earned A's or B's in such courses. Finally, the report of the Program for Early Admission to College indicates that 8 out of 10 Scholars favored the early admission idea.

While empirical evidence is sparse, it would appear that nontraditional students (military, adults) are more likely than traditional students to see advantages in credit by examination programs, especially when acceleration is encouraged. The sheer numbers of military personnel and adults enrolled in some kind of higher educational program suggest that demand would be high for programs which saved time and money. Unfortunately no easy measure of demand on the part of traditional students is available. While the AP program has considerably expanded in numbers of candidates since its inception, a number of individual institutional programs seem to have involved fewer and fewer students over time. It is difficult to gauge the influence of student demand in the latter cases, however, since most of the individual institutional programs have deliberately become more and more selective. In short, an estimate of potential student demand for credit by examination must await empirical investigation.

Almost no information is available on the extent to which student

attitudes vary depending on the particular course or discipline. A questionnaire study of all students who entered the Chicago program from 1933 to 1935 included a question on the relative organization of the instructional materials for the general area comprehensive examinations. Student responses indicated the following opinions:

	Well-organized	Not Well-organized
Biological Sciences	98%	0.5%
Physical Sciences	72	13
Humanities	69	14
Social Sciences	51	24

These figures suggest greater difficulties in preparing examinations in certain fields of study than in others, poorer student background in certain fields of study than in others, or a combination of the two. Dressel and others report frequent student objection to comprehensive examinations on the grounds that the exams are poorly constructed, ambiguous, and only vaguely related to the respective courses.

While the literature generally indicates that college or university administrators are more favorable than faculty to programs of credit by examination, solid empirical data is again lacking. Certainly some administrators and probably some students share the same objections as faculty members. The interview survey of AP policies and practices at 63 institutions suggests that admissions officers are generally in the vanguard in promoting more liberal AP policies. Given the emphasis placed on the difficulty of securing faculty approval and participation in the Buffalo and Chicago programs, one suspects that these programs received their first impetus from academic administrators rather than from faculty members. It is interesting that all the major programs of credit by examination in the U.S., the AP, CLEP, CCT, and the N.Y. CPEP, have been initiated and administered extra-institutionally.

No information is available on the attitudes of faculty organizations such as the Academic Senate towards credit by examination programs, although the equivalent organization at Chicago participated actively in the designing and periodic restructuring of the Chicago College Plan. While students of the history of higher education in the U.S. argue that the various national, regional, and state accrediting associations have consistently opposed any break from the traditional lock-step credit-hour system, the literature offers no specific examples of such opposition. Lewis reports that a 1959 conference of the National Commission on Accrediting recommended "judicious student testing" as one means of assessing teaching effectiveness and outcomes of programs of instruction.[40] Testing in this context would serve the purpose of institutional evaluation rather than offering an opportunity for student credit and acceleration, however. One suspects that if the various accrediting associations have not literally prevented experimentation in higher education, they have certainly not been a cooperating party to it.[41]

Summary of Empirical Data on Results for Participating Students of Credit by Examination and/or Acceleration

Unfortunately, for purposes of potential debate, almost all of the empirical data reports relatively successful programs and students. Granted that no small number of the studies have been done by individuals with some vested interest in demonstrating success, the overwhelming agreement in findings seriously calls into question a number of the major objections to credit by examination and acceleration. One might argue that such findings offer no surprise, since generally those students taking course credit by examination are superior students in the first

place. While the majority of studies either provide no comparison groups or compare students who have participated in credit by examination programs with regular students without controlling for ability, several studies have involved matched comparison groups. Those studies without matched controls strongly suggest that credit by examination and acceleration programs at least put students at no educational disadvantage. Those studies with matched controls suggest that the experience of participating in credit by examination or acceleration programs may have educational advantages in itself, quite apart from the receipt of credit or the saving of time. In general, students awarded course credit by examination, whether or not they accelerate, are likely to have the following characteristics:

1) Low attrition rates
2) High GPA's
3) High likelihood of graduating with honors
4) High likelihood of continuing to graduate or professional school
5) Average extracurricular participation

Jones and Ortner in 1954 compared 188 University of Buffalo students having nine or more examination credits (three or more subjects) with another group of students with three or less examination credits (one or less subjects). The purpose of the study was to determine if earning a considerable amount of examination credit is harmful or beneficial. The two groups were matched with respect to high school average, number of high school courses, sex, year of entrance, and curriculum. Family backgrounds were generally similar, although more of the first group were from clerical and skilled families and were only or first-born children, whereas more of the second group were from semiskilled and unskilled families. The authors report that no significant differences were found in performances of psychometric tests. The students in both groups had

similar academic interests and difficulties. The group of students with nine or more examination credits had a lower attrition rate, had slightly higher GPA's, and were more likely to go on to graduate school. Over 50% of those who took exams to accelerate received better grades in advanced courses, whereas just 20-25% of the superior students who did not take examinations improved their grades in advanced courses. No differences were found between the groups on participation in extra-curricular activities.

Gloria Chapman in a 1961 article reports a study comparing 69 University of Buffalo students who had nine or more examination credits and who graduated in three years or less with a matched group of nonaccelerates. No significant differences were found on senior-division grades, in honors at graduation, or in participation in extra-curricular activities.

A 1954 study of acceleration by examination in the Basic College at Michigan State University included a comparison of accelerated students with students of equal age and ability who did not accelerate. Students who accelerated had higher GPA's, showed a slight tendency to stay in school longer, and participated normally in extra-curricular activities.

The first phase of the Ohio State University study mentioned above included a comparison of 104 women graduating in three years or less with 104 women graduating in four years. The comparison group was matched in terms of age at entrance, general ability, curriculum, and same general graduation period (although the comparison group graduated one year later). The accelerates were found to have better academic records and to have participated reasonably in extra-curricular activities. The follow-up study involved a matched comparison of 112 accelerates with 100

non-accelerates. Ten years after the B.A., twice as many accelerates as non-accelerates had earned a further degree. Flesher and Pressey suggest that since ambition and energy were not controlled, these factors might explain the differences between the two groups. But they conclude that since the accelerates so frequently mentioned the challenge and stimulus of acceleration as important, acceleration in itself may have beneficial effects. It should be remembered that these women were part of no special accelerated program and received no extra advice or counseling from faculty.

While not involving credit by examination, several studies of the effects of early admission to college deserve mention here, since early admission is one type of acceleration and directly challenges the arguments that accelerated students are too immature, have weak backgrounds in certain subjects, miss the intangibles of college life, and the argument that high school work cannot be the equivalent of college course work. Pressey reviewed a number of studies done from 1913 to 1942 and concluded that the evidence was practically unanimous that younger entrants to college were most likely to graduate, had the best academic records, won the most honors, and presented the fewest disciplinary difficulties.[42] Pressey summarizes three exploratory studies conducted at Ohio State University during the period 1937-1947:

> The three exploratory studies just summarized suggest that the lengthening of full-time education over the last hundred years or so has tended to delay adult accomplishment, that success in life career of college graduates tends to be less with later college graduation, and that, even when such varying factors as ability are kept constant, those finishing college earlier tend to be more successful than those finishing at the conventional age.[43]

The most comprehensive study of the results of early admission to college is the report of the Program for Early Admission to College. A

grant from the Ford Foundation enabled 1,350 students, most of whom were 16 years of age or younger and had not graduated from high school, to enter 12 colleges and universities as freshmen from 1951 to 1954. The 1957 report was prepared when only two of the groups had graduated from college. The program was publicized and able high school students who had heard of the program applied directly to one or more of the 12 institutions. The students were selected by the individual colleges and universities. The 1,350 Early Admission Scholars were matched with a comparison group on the basis of aptitude scores, but of course the comparison students were two years older. Some institutions also controlled for SES, home community, and scholarship aid. The results of the study indicated that academically, all four groups of Scholars outperformed their classes as a whole and their comparison students. Among the first two groups, the proportion planning to attend graduate school was substantially higher than that among the comparison students. While the Scholars encountered more initial difficulties in adjusting to campus life than their older comparison students, most difficulties were minor and soon overcome. If students who were two years younger than average for college entrance and who had not completed high school could accelerate successfully, one suspects that many of the traditional objections to acceleration for students who have high school degrees and are already in college are exaggerated.

The conclusions of those studies not involving matched control groups may be summarized briefly. Studies of the performance of AP candidates reveal the following findings:

1) AP candidates when placed in advanced courses seem to do very well. Studies show that between 70 and 80% receive A's or B's in their sequent course work.

2) AP students generally get higher grades in sequent courses than other students and usually have higher GPA's for all subjects as freshmen, sophomores, and graduate students. They are also more likely to graduate with honors.
3) Even students who took examinations but placed low outperform their colleagues.

A study of nearly 600 AP candidates by Casserly revealed that half of the students interviewed were majoring in one of their AP areas or a closely related area, and almost four-fifths planned to or were attending graduate school.

Research on the college performance of military personnel who complete their high school degrees through the GED tests indicates that about 55% have been successful in maintaining a minimum GPA. The majority of studies show that in most colleges and universities, the GED students have not succeeded as well academically as students who have completed four years of formal high school work. Without matched controls, however, it is impossible to know whether this finding indicates problems with the GED testing program or whether the GED students are simply less able academically.

Ervin P. Van Der Jagt and George W. Angell report that accelerates in the basic Biological Science course at Michigan State University got better grades in subsequent specialized biological science courses than students who did not accelerate. A report on the Chicago program indicates that students who accelerate through the placement tests do as well as normal students on the comprehensive exams taken after all requirements in an area are fulfilled. Studies at Antioch and at Ohio State University show that the more credit by examination a student has earned, the better his overall academic performance. A questionnaire study of 132 students who had accelerated through credit by examination at the

University of Buffalo indicated that 39% received honors at graduation and 56% attended a graduate or professional school. Of the 300 adults accepted for the Brooklyn program as of 1962, 84 had graduated and of these 49 had continued to graduate school, 76 had withdrawn, and four had been dropped.

Additional evidence in favor of credit by examination and acceleration programs is provided in several studies comparing the achievement levels of students at different stages on the educational ladder. An analysis of the CLEP General Examination scores of about 44,000 servicemen tested recently revealed that depending on the particular test, from 12 to 27% of the men who had not studied beyond high school scored as well as or better than the average college sophomore.[44] The Carnegie Foundation Pennsylvania Study found that 15% of the freshmen at one college scored above 72% of the seniors of that same college on a variety of tests. This same study reported the results of examinations given to college sophomores in 1930 and to college seniors in 1928 and 1932. Achievement as measured by the examinations varied widely both within and between institutions. The knowledge of students taking the tests ranged from 110 to 1,580 items answered correctly, and some students with from zero to five credit hours did better than many with 50, 70, or 90 credit hours.[45] The Early Admission Scholar report states:

> ...even after making due allowance for the fact that the Scholars were exceptionally able students, and for the fact that the Early Admission colleges as a group are probably of higher quality than the cross-section of American college represented by the seniors and first-year graduate students whose test scores were reported above (GRE Area Tests), the fact remains that the Scholars--after less than a normal high school preparation and only two years of college--demonstrated that they had a better grasp of the basic concepts of a liberal education than a large body of American college seniors and first-year graduate students.[46]

In sum, the above empirical data calls into strong question the traditional view summarized below:

> The opponents of acceleration seem to feel...that mature learning is, at least in large part, a matter of seasoning that cannot be attained without predetermined units of exposure, like the ripening of grapes in the sun where a curtailment of time reduces the sugar content. They seem to feel that the same length of time is required for all individuals.[47]

Tentative Comments on Financial Costs and Benefits of Credit by Examination and Acceleration for Students, Faculty, and Institutions

Unfortunately the available literature provides very little information on the financial costs and benefits of credit by examination and acceleration programs. One reason for this is that some of the programs discussed in this report have explicitly deemphasized the notion that credit by examination and acceleration might result in institutional savings. It is unclear whether such deemphasis is due to the fact that the programs have actually resulted in greater cost, or whether it has traditionally been considered inappropriate to emphasize the financial benefits of certain types of educational programs. Another reason is that some programs clearly deemphasize the potential for students to save time and money through acceleration, focusing instead on credit by examination for purposes of enrichment (AP, CLEP, Michigan). Leo Haak comments on the Michigan Basic College program:

> ...but we rejected all applications [to take examinations for credit] which gave financial need or lack of interest in the course as a primary reason for wanting to accelerate.[48]

A number of programs do, however, emphasize acceleration and the potential saving in time and money for students--Buffalo, CCT, N.Y. CPEP, Chicago, Wisconsin. One study of credit by examination programs found

that the average charge per individual subject examination was generally between $5 and $15. Another investigator found that fees vary from very low to full tuition for the course. While Illinois and Connecticut charge no fees, the fee per examination for the AP, CLEP, and N.Y. CPEP programs is currently $15. These programs are national or regional, and presumably result in no cost to individual institutions except for the minimal amount of faculty time which might be required to read the essay portions of the examinations.

One would expect individual institutional programs to be more costly for students, faculty, and the institution. While the Buffalo program originally charged no fee, beginning in 1936 students were charged a nominal fee--$5 for a three-hour course and $10 for a six-hour course--which would total about $50 for a year of college credit. If the student entered the University of Buffalo, however, this fee was deducted from his tuition charge. The reason for the fee was apparently to ensure that only superior, serious students took the examinations. Jones and Ortner reported in 1954 that one unsolved problem in the Buffalo program was how examinations for credit should be financed. The faculty objected to not being paid for designing, administering, and grading the examinations. Jones and Ortner recommended that the examination scheme should eventually be made to pay for itself on a basis comparable to its real cost, such as charging one-third the cost of normal credit for an examination.

W. L. Barnette, Jr. investigated the financial implications for the University of Buffalo of 4,010 examinations taken by 1,700 students over 25 years:

> Costs to the students participating in this program would amount, at the standard rate of $5 for each semester exam, to $20,050--a sum which may well be thought of as scholarships since students, when they enroll at the University,

> may have such fees deducted from their tuition charges. At the present tuition rate of $19.25 per semester (not, however, the tuition rate for most of the time period involved), this sum represents a possible tuition 'loss' of $231,477.50, a sum which may be thought of as an investment by the University in the superior student. This figure is predicated on the assumption, generally true, that all of those 4,000 exams were for three semester-hours of credit.[49]

In the above case, the cost to the institution over a 25-year period seems minimal.

Haak comments on the Michigan Basic College program:

> Of course, the purpose of acceleration should not be to save money but to make it possible for superior students to progress at a rate commensurate with their abilities. However, it is interesting to estimate the saving in staff time by the use of the special permission system. About 3,550 students accelerated in Effective Living [one of the original seven basic courses] in the seven years covered in this article. On the average, each student who accelerated did so by more than one quarter. We would have needed about one and one half more staff members in the department if these students had continued in class.[50]

Recall, however, that the Basic College program and its affiliated faculty units involved only first-year required courses for all entering students and deemphasized early completion of the degree. If cost increases with more advanced courses (smaller classes, more tenured faculty involved), the financial saving in the Basic College may have represented additional cost to the institution as a whole, since students relieved of basic course requirements could then take more advanced courses than they normally would. An article on the program for adults at Brooklyn states that tuition rates for the project have ranged 60 to 80% higher than those normally imposed. The Brooklyn program, however, involves tutorials, seminars, and other costly educational provisions.

Pressey makes a general argument to the effect that credit by examination and acceleration programs result in little if any added institutional cost:

> It is commonly assumed that arrangements for rapid progress of the more able involve special expense. A student who finishes in three years instead of four pays only three years' tuition. If he obtains credit by examination, with little or no examination fee, the university loses additional revenue. Certain institutions, therefore, charge a substantial examination fee, or even require full-tuition payment, for courses so accelerated. However, the use of the best means of accelerating students reduces institutional burdens and saves room space and other institutional facilities. Though those finishing early or obtaining examination credit may pay less tuition, this loss is likely to be largely compensated for (if not more than balanced) by reduction in the number of students dropping out and addition of able students eager for special opportunities.[51]

A CLEP brochure includes some comments on the financial and instructional implications of CLEP. It is suggested that class scheduling has been made more flexible in some institutions, and in some instances colleges have been able to decrease the number of courses or sections in basic or required subjects. The brochure says there is no proof that institutions suffer tuition losses because of awarding credit by examination, since "the vast majority of students awarded credit through these two activities (AP and CLEP) do not graduate early."[52] This is again a situation where if advanced courses cost more, then institutional cost may actually be increased.

The above information is clearly fragmentary rather than conclusive, and unfortunately a full investigation of the financial implications of credit by examination and acceleration, utilizing cost-benefit analysis, cannot be done within the scope of this paper. Certainly, however, any such investigation must consider the following issues:

1) What are the relative costs and benefits, for students, faculty, and the overall institution, of programs of acceleration as opposed to programs of enrichment?
2) What are the relative costs and benefits, for faculty and the overall institution, of the several alternatives for allocating responsibility for the design, administration, and grading of examinations for credit?

General Problems and Issues in Patterns of Examination Design and Administration

Examination Design

While one might expect that the types of testing instruments used for examinations for course credit would have been a major issue in the literature, such is not the case. If debate about the kinds of testing instruments to be used occurred in the development of the programs described in this study, such debate is not reported. The examinations for all of the programs discussed involve designs little different from regular course exams--objective questions, essay questions, or a combination thereof--the exception is that oral or practical tests are rare. The CLEP General Examinations contain only objective (multiple-choice) questions. The AP examinations emphasize primarily essay questions, with a short objective section. The CLEP Subject Examinations are primarily objective, with an optional essay section. Both objective and essay questions are included in the N.Y. CPEP, the CCT, and the Chicago College examinations. The examinations for the Buffalo, Illinois, and Wisconsin programs are equivalent to the regular end-of-course examinations, and the literature does not describe their design. No information is available on the Michigan, Illinois, or Connecticut program examinations.

The paucity of alternatives in examination design is not limited to credit by examination programs. James M. Richards, Jr., in "Assessing Student Performance in College," concludes after a survey of research literature on the assessment of college student accomplishment that such research is very sparse.[53] Richards reviews a number of empirical studies which suggest that conventional multiple-choice testing, whether used for evaluation upon completion of a course or for purposes of credit

by examination, is not the proper testing method. Richards cites several studies by G. F. Beanblossom indicating that the CLEP tests are less than satisfactory. Exceptionally high correlations have been found among the five General Examinations, suggesting that the discriminatory validity of these tests is not high. Beanblossom further found that repeated exposure to courses definitely increased examination scores for the Natural Sciences, moderately increased scores for the Humanities, and only minimally increased scores for the Social Studies. He concluded that the CLEP tests do not measure anything different from what is measured by the traditional battery of pre-college aptitude examinations, and that they therefore should be used with caution in evaluating liberal arts curricula.[54] Richards notes that while little research has been done on the CLEP Subject Examinations, one would expect them to be much more unique and dissimilar from aptitude tests than the General Examinations. He recommends that the Subject Examinations therefore should continue to be used to grant credit by examination, at least until more suitable measures are available.

One area of examination design which has aroused debate is the question of what to include in the examinations. While the form of the exam, objective or essay, somewhat limits possibilities here, problems still abound. Regardless of where responsibility is placed for design, the construction of examinations for course credit requires a clear notion of the objectives of the course in question and of precisely what students are expected to know. This requirement is stiffer in the case of examinations for credit than in regular end-of-course examinations because additional evidence of performance such as midterms or papers is not available. Reports from the two major individual institutional

programs described here (Buffalo and Chicago) reveal ample evidence of the difficulties involved in deciding the specific subject-matter to be included in examinations. As indicated in the discussion of the appropriateness of various subject-matters to credit by examination schemes, decision is especially difficult in the Social Sciences and Humanities.

It has been stated previously that faculty are much more likely to accept examinations for placement than for credit. A discussion in the ACE report on COLLEGE TESTING suggests one reason for this which relates to choice of subject-matter. While both placement and credit examinations must ascertain whether given students have achieved a level of competency equivalent to that achieved by those who have taken the course, there is a major difference between them in the extent to which the outcomes of the course must be measured:

> In waiving a required course, it may be necessary to be concerned only with evaluating skills and learning that are essential to success in subsequent courses. In granting credit, these elements, together with other major achievements the course is intended to develop, must be measured. Assurance is needed that the students who receive credit by examination are as competent as those who have taken the course. Thus, an examination designed for waiving the course will not necessarily satisfy the requirements for granting credit; a separate and somewhat more comprehensive examination is needed.[55]

Turning to another aspect of examination design, the programs described here for which information is available specify time limits of from an hour and a quarter to three hours for examinations for credit. Just why this particular range predominates is unclear, except that it corresponds precisely with the time limits for traditional mid-term and end-of-course examinations. Finally, several studies reviewed in this report discuss the issue of whether or not syllabi are to be provided to aid students in preparing for examinations for credit. The Buffalo,

Chicago, and Wisconsin programs all provide syllabi, including subject-matter outlines and reading lists, and sometimes sample questions. Jones and Ortner place strong emphasis on the necessity of providing syllabi, while noting that such provision places additional responsibility on whoever prepares them--generally faculty members. Jones and Ortner also note that at Buffalo, problems were sometimes encountered in getting the faculty to prepare the syllabi, suggesting that faculty objections to credit by examination programs may be greater when they must take responsibility for the preparation of supporting materials.

Administration of Examinations

The following are the major policy issues regarding programs of credit by examination which face individual institutions:

1) At what administrative level should programs be initiated and operated: individual instructor; departmental committee; extra-departmental unit?

2) Should programs of credit by examination emphasize enrichment and/or acceleration?

3) At what administrative level should responsibility be placed for designing, administering, and/or grading examinations?

4) At what administrative level should responsibility be placed for giving approval to students to take examinations?

5) Which students should be permitted to take examinations: all students; a limited proportion of students determined by academic standing; only clearly superior students?

6) What should be the standards for grading examinations: demonstration of competence less than the equivalent of regular completion of the course but adequate for advanced work; demonstration of competence equal to regular completion of the course; demonstration of competence greater than regular completion of the course?

7) In what subject-matter areas should examinations be offered?

8) How are examination results to be recorded on the transcript: regular grading system A-F; pass/fail; pass only; credit only?

9) Should students be required to be registered in order to take the examinations?

10) Should limits be put on the number of hours of credit by examination which may be applied towards the degree?

11) Are examinations to be provided for first, second, third, and/or fourth year courses?

12) How many times should students be allowed to repeat an examination in the same course?

13) Should students taking examinations be given special further counseling by faculty?

14) How should problems of interinstitutional communication be handled?

The available literature indicates that nothing approaching general agreement on the above issues has been reached. A questionnaire study of 301 colleges and universities in the North Central Association revealed extreme variability in policies on credit by examination:

> 171 institutions granted credit by examination, and 105 of these granted it in all departments. 19 institutions gave all students the opportunity to earn credit by examination; 65 did not. Some allowed students to take examinations throughout their attendance; others limited the time or had residence requirements. 91 graded examinations for credit the same way as they did course work; 60 did not. 104 of the institutions charged fees ranging from 25 cents to $15 a credit. 66 institutions placed no limit on the amount of examination credit allowed; the mode for credits allowed was 15. 96 of the institutions had examinations graded by the instructor... Essay examinations were used most frequently. 38 institutions used many types of questions...57 of the institutions reported that the outcome of the program had been acceleration; 49 said it was acceleration and enrichment.[56]

The programs discussed here reveal similar variability. While almost all of them are limited to examinations covering at most the first two years of undergraduate work, they vary considerably with respect to issues 1, 2, and 3, dealing with the administrative level at which responsibility is placed for initiation and operation, approval, and design, administration, and grading. In addition, while anyone may take the CLEP, CCT, CPEP, Chicago, and Illinois examinations; Buffalo, Wisconsin,

and Michigan have established varying limitations on who may take the examinations.

Given the paucity of information on the policy aspects of credit by examination programs, the following discussion and recommendations should be taken as very tentative.

1) Given the traditional conservatism of faculty members and the tendency towards interdisciplinary competition, it would be worthwhile to assess the advantages of placing responsibility for the initiation and administration of a program of credit by examination with an extra-departmental administrative unit, such as an examining board composed of academic administrators, testing experts, and faculty members. Such an arrangement would resolve the problems encountered in the Buffalo, CCT, AP, and CLEP programs when policies regarding who shall take examinations, grading standards for examinations, and such are left to the discretion of individual faculty members or departmental committees. Reports from all of these programs recommend that authority be centralized and systematic rather than decentralized and likely irregular.

2) The general issue of enrichment vs. acceleration has been dealt with above. Certainly if one purpose of a program of credit by examination is savings in time and money for students, then acceleration must be not merely permitted but explicitly encouraged. In those programs where acceleration is not emphasized, few if any students attempt to accelerate. Jones and Ortner report that the success of the Buffalo program was due primarily to extensive publicity of the potentials for acceleration. Glenn S. Dumke, Chancellor of the California State College system, in "Some Proposals for Change in the California State Colleges," proposes one method of "encouraging" acceleration, if that is the aim of

a credit by examination program. He suggests that students who on their own volition take work in excess of that required for the degree or credential be charged the full cost of instruction.

3) Certainly individual faculty members and departmental units must be centrally involved in the design, administration, and grading of examinations for credit. Whether they should be solely responsible is another question. When individual faculty members of departmental committees assume full responsibility, there is frequently extreme variation in the nature and breadth of the course content covered both within and between departments. In addition, while the content of the examinations should be determined by faculty members, they are not necessarily the best-qualified to decide matters of form or design. The Chicago program, whereby examinations were designed by committees composed of faculty members in the particular areas, experts in the construction of examinations, and representatives of the extra-departmental administrative board, is worth attention. By this arrangement, knowledge of subject-matter is combined with knowledge of testing devices and with knowledge of the overall objectives of the program. There is thus a greater likelihood that the uniqueness of various subject-matters may be preserved without sacrificing at least minimal standardization of the overall program. The literature suggests that placing responsibility for grading outside the faculty member or department in question arouses strong objections from both faculty and students. Given the traditional American aversion to external examination programs, it seems that grading might best remain the prerogative of the faculty. In addition, the more fully faculty participate in the program, the more likely they will approve of it.

4) The answer to the problem of who should give approval to students

to take examinations depends upon the general eligibility requirements of the program. If eligibility depends only upon a certain standing in the class, or on a specified GPA, then approval could be the responsibility of an extra-departmental administrative unit. If eligibility entails the satisfaction of departmental prerequisites or relates to a student's choice of major, then presumably the department would be in the better position to make decisions.

5) and 6) The issues of who should be permitted to take examinations and of examination standards are difficult ones. The following are the major objections to allowing all students to attempt credit by examination: 1) such an arrangement eventually results in the lowering of the academic standards of the institution; 2) less competent students who succeed in the examinations may suffer disadvantages in later course work; 3) failure rates will be high; 4) such a program is too costly.

There is no evidence for or against the first objection, and some of the empirical data presented previously casts doubt on the likelihood of the second. The last two objections deserve attention. The literature suggests an interesting pattern in the development of credit by examination programs. While in the beginning years of both the Buffalo and Michigan programs a fair proportion of students were permitted to take examinations for credit, as the programs matured, eligibility requirements and grading standards were consistently raised. Dressel reports a trend downwards over time in credits earned by examination in the Michigan program, in part because of a change in the grade required to receive credit from a C to a B, in part by a gradual restriction of the policy on acceleration. Jones and Ortner state that thanks to more strict eligibility requirements, the success rate in the Buffalo program had

increased from 80 to 90% over a 20-year period. The concern about failure rates seems to have little to do with the possible negative impact of a failure experience on the student. Rather, it would appear to involve two issues: 1) over time, concern moves away from the success of the individual student and towards the success of the overall program; 2) those administering the program come to feel that students who receive credit by examination are somehow "cheating the system" and ought to pay for it by demonstrating a competence even higher than that expected upon completion of the regular course.

On the first point, although programs may begin with the objective of providing educational advantages for students, over time the objective may become the success of the program in itself, regardless of how few students are advantaged by it. Why the success of the program may come to be the overriding concern is unclear. It might be a response to persistent faculty objection, or a means of demonstrating the academic excellence of the institution. On the second point, while one would expect that a demonstration of competence equivalent to end-of-course expectations would be sufficient, this is not always the case. The Michigan Basic College program at one point explicitly recommended that examinations for credit be more difficult than regular course requirements. In several programs, students must receive C or B grades on examinations for credit, whereas D's or C's represent passing grades on end-of-course examinations, even when one examination serves both purposes.

It is difficult to assess the fourth objection, that it is too costly in time and money to allow all students to attempt examinations for credit. Certainly if 80% of all students attempted examinations for credit in one or more courses and 90% of them failed, the program might

well be judged too costly. But some evidence suggests that this is unlikely to occur. While in theory all high school students may take the AP examinations, in practice very few who have not had an AP or similar course attempt the examinations (only 5%). Granted that this may have to do with lack of information and that many students who should try the examinations do not, certainly one of the reasons more students do not attempt is that they know they would not be successful. Perhaps a program of credit by examination which explicitly specified high standards and maintained them in practice could be open to most if not all students without undue costs because of high failure rates, simply because students would not attempt the examinations unless they felt qualified.

If limits on eligibility to take examinations for credit are to be imposed, where should the line be drawn? The programs described in this report vary in their limitations from the top one-third academically to a 3.0 GPA or better to the top one-fifth or one-sixth academically. Although the stricter the eligibility requirements, the larger the number of students who will be successful, limiting a program of credit by examination to clearly superior students has its disadvantages. In the first place, it deprives students of average or merely above average ability of an educational opportunity from which they might well profit. In the second place, limiting eligibility to the top three to five percent of students means that most faculty will not be involved in the program. The evidence suggests that the more extensive the program, within limits, and the greater the faculty participation in it, the more likely the faculty will accept the program. Finally, a program limited to a very small proportion of the student body has little potential for challenging the traditional credit-hour system of measuring academic

achievement. Decisions concerning eligibility to take examinations need to achieve a balance between the potential opportunities and savings to the greatest number of students through credit by examination programs and the cost to students, faculty, and the institution of high failure rates. The literature suggests that whether programs of credit by examination are initiated as experiments or as full-blown projects, the more extensive the program, in numbers of students and faculty involved, the greater the likelihood of endurance and of full participation by faculty and students.

7) Little can be added to the issue of which subject-matters are the best potential candidates for credit by examination programs. Certainly the broader the program in terms of areas covered, the greater the opportunities for students, the greater the possibilities for faculty participation, and the greater likelihood that traditional measures of educational achievement will be challenged. However, in areas of knowledge not customarily so tested, the designing of appropriate test instruments would be difficult. The ACE report on COLLEGE TESTING does offer a healthy warning in this respect:

> It may also be believed that there are intangibles that are acquired...during the course and that cannot be measured by an examination. This last answer should not be accepted too readily, however; the intangibles may not be measurable because they are not there to begin with.[57]

8) The question of how examination grades should be recorded on students' transcripts is more important than it might appear. The alternatives include using the regular grading system A-F, a pass/fail system, a mark of pass only, or credit only. The regular grading system is the only arrangement which permits inclusion of credit by examination grades in figuring the GPA, and is probably the easiest to administer in cases

of transfer and other nontraditional students. The regular grading system, however, has several disadvantages. First, some programs have persisted in using the full grading scale even though only clearly superior students are eligible for examinations and the examinations are more difficult than the regular end-of-course examinations. Second, it might be to the student's disadvantage to have a low grade on a first or second year credit by examination course recorded on his transcript and figured in his GPA.

The pass/fail and pass only systems for recording examination results both have the advantage that they may appear on the transcript in such a way as to conceal the fact that the course was completed by examination. This makes interinstitutional communication easier. Courses recorded as such, however, do not figure in the GPA. The pass/fail arrangement officially records failure. The pass only arrangement works so that success in the examination is recorded, whereas failure is ignored. The student may take the course or take the examination over again, if permitted. Under the credit only system, no indication of the quality or relative ranking of the examination result is recorded. This arrangement may make for problems in interinstitutional communication. The pass only system may have merit, since recording failure in a credit by examination effort seems to defeat the purpose of such a program. If there were an option between pass only and grades A to D, it might be worthwhile to consider the possibility of allowing the student to decide how his examination credit is to be recorded.

9) and 10) All of the individual institutional programs described except Buffalo and Connecticut require that students be registered in order to take the examinations, and most place limits on the number of

hours of credit by examination which may be applied towards the degree. The two issues are related. The registration requirement serves several functions: it guarantees tuition fees and it prevents students from completing credit requirements without paying for them; it enforces residence requirements. The limitation on credit by examination hours, generally stipulating that at most no more than half of the total number of credits required for the B.A. may be earned through examination, likewise guarantees tuition fees and enforces residence requirements, since a student cannot possibly complete the B.A. in less than two years. In addition, this limitation prevents credit by examination schemes from becoming serious challenges to the traditional lock-step four-year B.A. program. Probably the full potential of credit by examination programs will only be known when registration requirements and limitations on credits applied towards the degree are modified.

11) While almost all of the programs described in this report are limited to first and second-year undergraduate courses, it would seem that credit by examination programs could be extended to include at least some third and fourth-year courses. Unfortunately the available literature provides no information on the unique problems which such extended programs might encounter, except for the obviously greater difficulty of testing at advanced levels of knowledge.

12) The literature does not discuss alternative policies on how many times a student should be permitted to take an examination for credit in the same course. Individuals may only repeat the CLEP Subject Examinations after a year's interval; the General Examinations may be repeated once within a year with special permission. A reasonable policy might be to permit a second or third try after a specified period of time,

say three months, as is customary with graduate competence examinations and the like.

13) The question of whether or not students taking examinations for credit should be given special further counsel by faculty members seems to depend on the objectives of the program. If the result of the examination is placement in an advanced course as well as credit or early entrance into a major, then counseling may be appropriate. If the result is credit only, then counseling may be unnecessary.

14) The question of how problems of interinstitutional communication are to be handled is complicated, since transfer or other non-traditional students are not the only issues. Difficulties relating to credits earned through examination may emerge in transactions with prospective employers, accrediting agencies, and graduate or professional schools. As noted above, those institutions with enduring programs of credit by examination have presumably resolved such difficulties. One solution has been to record the examination grade just as end-of-course grades are recorded. Currently, however, pass/fail and such marking systems are coming into increasing acceptance, and many of the problems of inter-institutional communication may simply fade away with time.

Speculations on Incentive Structures for Students, Faculty, Academic Departments, and Institutions

For students, the major incentives for taking advantage of credit by examination programs have been discussed previously: enrichment and/or acceleration; savings in time and money; recognition of diversity in experiences, abilities, potentials, and objectives; avoidance of repetition in course work. It is clear from the literature, however, that

students will only take advantage of such programs when they are well-publicized and when students are explicitly encouraged. One negative note should be mentioned in this context. The currently poor job market may somewhat decrease the incentive value of acceleration. As mentioned above, during the 1930's, programs of educational acceleration did not take hold, because it was "futile to move young persons rapidly through school only to put them into unemployment."[58] A somewhat similar job market situation prevails now in the U.S.

It is more difficult to identify incentives which would encourage faculty members to accept and fully participate in programs of credit by examination. A few faculty would be motivated simply by the opportunity to provide students with fuller educational possibilities, but such motivation could hardly sustain a program. Others would be attracted by the potentials for greater flexibility in requirements and curriculum, for the upgrading of the general curriculum, and for attracting superior students to the institution. The most significant and probably necessary incentive for the faculty, however, would probably be either the promise of a lighter work load or of reimbursement in some form for work done. Given tightening university budgets, lighter work loads are not very feasible, but faculty acceptance of and participation in a program of credit by examination likely requires some adjustment either of work loads or of salaries. Any consideration of credit by examination programs should therefore take into account some additional cost to the institution if faculty are to be involved.

Turning to academic departments, the problem becomes somewhat greater than that of incentive structures. Data presented in the section on the appropriateness of various subject-matters for credit by

examination schemes suggests that agreement upon the subject-matter of the discipline is more easily reached in some departments than in others. Specifically, agreement appears to be greater in the so-called hard sciences than in the Social Sciences and Humanities. If responsibility for designing examinations for credit were placed with departmental committees, some departments might find the task extremely difficult. If the responsibility for the designing of examinations were placed with an extra-departmental unit, individual faculty responsibility would at least be shared with persons outside the specific discipline and department. It might be worthwhile to consider the advantages of limiting the role of the department as a unit to what might be termed approval functions--approval of examinations once designed and where necessary of student eligibility to take examinations, and to grading and other administrative functions. It is possible that the most appropriate incentive structures (more money, facilities, or whatever) could prove inadequate in encouraging at least some departments to accept major responsibility for programs of credit by examination. And it may be that departments as units are not the proper loci for such responsibility.

The major incentives for individual institutions to undertake programs of credit by examination have been reviewed above: possible savings in money; the possibility of more efficient use of resources and facilities; greater flexibility in curricula and requirements; the potential upgrading of the curriculum; the attraction of superior students. Given the "if's" surrounding most of the above advantages, however, and assuming that the initiation of a major program entails costs in time, money, and resources which will probably not be recovered, an institution is unlikely to undertake such an effort unless there is a strong overriding commitment

to providing new educational opportunities and advantages for students, or the costs are balanced by potential benefits to be reaped by improving relations between the institution and the external environment--in the case of a state university such a program has the potential of improving the capability of the institution as a service organization.

FOOTNOTES

[1]Dietrich Gerhard, "Emergence of the Credit System in American Education Considered as a Problem of Social and Intellectual History," American Association of University Professors Bulletin, Vol. 41, 1955, p. 650.

[2]Ibid., p. 657.

[3]John S. Brubacher and Willis Rudy, Higher Education in Transition (New York: Harper and Brothers, 1958) p. 343, footnote 17, Chapter 17.

[4]Gerhard, op.cit., p. 658.

[5]Edward S. Jones and Gloria K. Ortner, College Credit by Examination: An Evaluation of the University of Buffalo Program (Buffalo: University of Buffalo Press, 1954) pp. 128-129.

[6]Ernest V. Hollis, Philanthropic Foundations and Higher Education (New York: Columbia University Press, 1938) p. 136.

[7]Ibid., p. 151.

[8]Sidney L. Pressey, Educational Acceleration: Appraisals and Basic Problems (Columbus, Ohio: Ohio State University Press, 1949) p. 2.

[9]Lanora Lewis, The Credit System in Colleges and Universities (Washington, D. C.: U.S. Department of Health, Education and Welfare, Office of Education, 1961) p. 9.

[10]In Ronald L. Flaugher, Margaret H. Mahoney, and Rita B. Messing, Credit by Examination for College-Level Studies: An Annotated Bibliography (Princeton, N.J.: College Entrance Examination Board, 1967) p. 118. Paraphrased from W. D. Nutting, "College: Assembly Line or Community? Evaluating Intellectual Attainment by the Course-With-Credit-Method," Commonweal, Vol. 50, 1949, pp. 382-384.

[11]Lewis, op.cit., p. 9.

[12]Pressey, op.cit., pp. 25-26.

[13]Shirley A. Radcliffe and Winslow R. Hatch, Advanced Standing (Washington, D. C.: U.S. Department of Health, Education and Welfare, Office of Education, 1961) p. 13.

[14]Ibid., p. 4.

[15]Ibid., p. 6.

[16]Patricia Casserly, College Decisions on Advanced Placement, II, (Princeton, N.J.: Educational Testing Service, 1965) p. 3.

[17]Radcliffe and Hatch, op.cit., p. 7.

[18]Charles C. Cole, Jr., Flexibility in the Undergraduate Curriculum (Washington, D. C.: U.S. Department of Health, Education and Welfare, Office of Education, 1961) pp. 14-15.

[19]Fund for the Advancement of Education, They Went to College Early (New York: Fund for the Advancement of Education, 1957).

[20]Cole, op.cit., p. 16. Christopher Jencks and David Riesman in The Academic Revolution observe: "Hutchins also earned the hostility of many high school principals and counselors by recruiting undergraduates from the tenth and eleventh grades of high school," The Academic Revolution (Garden City, New York: Doubleday and Co., Inc., 1969) p. 495.

[21]Radcliffe and Hatch, op.cit., pp. 12-14.

[22]Ibid., pp. 14-15.

[23]N. D. Kurland, "College Proficiency Examinations and Honors Programs," The Superior Student, Vol. 5, 1963, p. 7.

[24]Lewis, op.cit., p. 32. Such restrictions are common to many such programs.

[25]None of the literature on the CPEP provides detailed information on the success rates of candidates, and a letter of inquiry drew the response that such information is not currently available and will not be for some time. One brochure does state that as of January 1971, 9,700 examinations had been administered and over 8,000 college credits had been granted for successful completion of the examinations.

[26]Commission on Accreditation of Service Experiences, American Council on Education, "Opportunities for Educational and Vocational Advancement," The Bulletin, No. 10, Third Edition, June 1965, reviewed in Flaugher et al., Annotated Bibliography, p. 133.

[27]Harvard University, in conjunction with 10 other New England institutions, participates in the Commission on External Courses. Harvard directs the courses given in the Boston and Cambridge areas which are acceptable for the degree of B.A. in Extension Studies. The courses correspond closely in subject-matter, methods of instruction, examinations, and scale of marking with regular courses, and hence do not challenge the credit-hour system.

[28]Association of University Evening Colleges, Proceedings, Twenty-First Annual Meeting, November 1959 (Pittsburgh: University of Pittsburgh, 1960), reviewed in Flaugher et al., Annotated Bibliography, pp. 104-105.

[29]Lewis, op.cit., p. 27.

[30]B. H. Stern and E. Missall, Adult Experience and College Degrees (Cleveland: Western Reserve University Press, 1960), p. 60.

[31]Alan Pifer, "Is it Time for an External Degree?", College Board Review, Winter, 1970-71, No. 78, pp. 5-10.

[32]Lewis, op.cit., p. 20.

[33]Daniel Bell, The Reforming of General Education (New York: Trustees of Columbia University, 1966) p. 38.

[34]Jencks and Riesman, op.cit., p. 496.

[35]Paul L. Dressel, editor. Evaluation in the Basic College at Michigan State University (New York: Harper and Brothers, 1958) p. 160.

[36]Lewis, op.cit., p. 15.

[37]In addition, Theodore Caplow and Reece J. McGee argue that the more objective the content of the discipline, the less identity there will be of men with courses. They observe that it is rare in Physics for anyone to "own" a course, but fairly common on English and the Humanities. Presumably therefore it would be more difficult for faculty in the Humanities to agree upon the content of examinations for credit. In The Academic Marketplace (Garden City, New York: Doubleday and Co., Inc., 1958) p. 124.

[38]College Entrance Examination Board, College Credit by Examination through the College-Level Examination Program (Princeton, N.J.: CEEB, 1970) p. 20.

[39]Marie A. Flesher and Sidney L. Pressey, "War-Time Accelerates Ten Years After," The Journal of Educational Psychology, Vol. 46, No. 4, April 1955, p. 232.

[40]Lewis, op.cit., p. 9.

[41]It would appear that the influence of accrediting associations has frequently been indirect rather than direct. That is, in designing experimental programs of whatever sort, individual institutions often take into account in advance what they think would be the evaluation of relevant accrediting associations, and limit their program designs accordingly. It would seem that the actual views of such associations have been only infrequently tested or challenged.

[42]Pressey, op.cit., p. 7.

[43]Ibid., p. 67.

[44]College Credit by Examination Through the CLEP Program, op.cit., pp. 19-20.

[45]W. S. Learned and B. D. Wood, The Student and His Knowledge (New York: Carnegie Foundation for the Advancement of Teaching, 1938).

[46]Fund for the Advancement of Education, op.cit., p. 31.

[47]Mazie E. Wagner, Anticipatory Examinations for College Credit (Buffalo: University of Buffalo Press, 1952) pp. 109-110.

[48]Leo A. Haak, "Acceleration by Examination," College and University, October 1953, p. 46.

[49]W. L. Barnette, Jr., "Advanced Credit for the Superior High School Student," Journal of Higher Education, Vol. 28, 1957, p. 20.

[50]Haak, op.cit., p. 51.

[51]Pressey, op.cit., pp. 141-142.

[52]College Credit by Examination Through the CLEP Program, op.cit., p. 21.

[53]James M. Richards, Jr., Assessing Student Performance in College (Washington, D. C. : ERIC Clearinghouse on Higher Education, May 1970) p. 1.

[54]Ibid., p. 2.

[55]Committee on Measurement and Evaluation of the American Council on Education, College Testing: A Guide to Practices and Programs (Washington, D. C.: American Council on Education, 1959) pp. 32-33.

[56]J. A. Hedrick, "College Credit by Examination," Journal of Higher Education, Vol. 31, No. 4, 1960, p. 212.

[57]College Testing: A Guide to Practices and Programs, op.cit., p. 33.

[58]Pressey, op.cit., pp. 25-26.

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